State of New Jersey
Department of Environmental Protection

DONALD T. DIFRANCESCO
Acting Governor

Robert C. Shinn,
Commissioner

NOV 20 2001

Edward A. Hogan
Porzio, Bromberg & Newman
163 Madison Avenue
Morristown, NJ 07960

Re: Hexcel Corporation (Hexcel)
Lodi Borough, Bergen County
ISRA Case #86009
Remedial Action Workplan Addendum Dated November 23, 1999 and Remedial Action Reports (RARs) dated January 13, 2000 and February 28, 2000

Dear Mr. Hogan:

Please be advised that the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the above referenced Remedial Action Workplan Addendum and RARs. The NJDEP's comments regarding the reports are noted below:

I Soil Comments

2-Phase Extraction

1. The proposal to treat the contaminated soils via the 2-Phase Extraction technology is conditionally acceptable. Be advised that the NJDEP is conditionally approving the remediation even though the elevated levels of volatile organic compounds (VOCs) have not been delineated to either NJDEP's residential direct contact soil cleanup criteria (RDCSCC) or impact to ground water soil cleanup criteria (IGWSCC) whichever is most stringent. This conditional approval is based upon Hexcel's proposal to utilize the treatment system in a stepwise approach. With this approach Hexcel can finish the delineation of the elevated levels of VOCs concurrently with the initiation of the 2-Phase Extraction system.

2. Be advised that the NJDEP's letters dated May 4, 1993 and October 26, 1993, which were the last letters sent by the NJDEP that address soil issues, conditionally approved additional delineation via a Hexcel proposed soil gas survey. The soil gas survey was never completed. Therefore, areas which contain elevated levels of VOCs have not been delineated. Hexcel shall complete the delineation of the elevated levels of VOCs concurrently with the initiation of the 2-Phase Extraction technology in Hexcel's newly designated area of concern, AOC- 1A. This can be accomplished as AOC-1A does not appear to contain elevated levels of VOCs in the soil column. If elevated levels of VOCs have not been delineated in this area Hexcel may still initiate the 2-Phase Extraction system at AOC-1A as long as adequate post remedial sampling is completed in this area. Hexcel shall fast track the horizontal and vertical delineation of the elevated levels of VOCs in the other areas of the site in order to expeditiously complete the delineation prior to the initiation of the 2-Phase Extraction system at AOC-1B, the next area targeted for remediation.

3. Hexcel shall document the exact area of the site which is to be treated by the 2-Phase Extraction system. Specifically, Hexcel shall document how the 2-Phase Extraction will address all the elevated levels of contaminants as it does not appear from the maps submitted that the system targets all areas which contain elevated levels of contaminants. Hexcel shall submit revised site maps which depict the elevated levels of contaminants with their associated sample depths and the areas of the 2-Phase system which address these areas.

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4. Hexcel has failed to submit a proposal for post remedial sampling. This is unacceptable. Therefore, Hexcel shall submit a proposal for post remedial soil sampling after the delineation of all contaminants has been completed.

AOC Designation: AOC 6: Remediation of PCB's

5. Be advised that the NJDEP is concerned about the direct contact exposure due to the elevated levels of PCBs (up to 26,000 ppm) detected in the surficial soils of the site in 1998 and 1999. It should be noted that Hexcel had previously documented (May 15, 1993 Monthly Progress Report) that " In the areas where soils exceeding cleanup standards have been identified, asphalt pavement exists. As such, there is no direct contact, dermal, ingestion or inhalation exposure risk associated with these soils". The NJDEP is now extremely concerned as these comments are not valid as indicated by the latest soil sampling results. As such, a potential direct contact health threat existed on the site for many years due to the elevated levels of PCBs detected in the surficial soils.

Hexcel has failed to adequately document why the additional PCB samples were collected in 1998 and 1999. This is unacceptable. Hexcel shall explicitly document why soil samples where collected for PCBs after many years of soil investigation inactivity. Hexcel shall document whether the discharges of PCBs were new or historical in nature. In addition, Hexcel shall document whether, based on the rationale and sample results from the recent round of surficial PCB soil samples, additional PCB surficial soil sampling is warranted for other areas of the site.

6. Hexcel has proposed to address the extremely elevated surficial soil PCB contamination via the excavation of a limited area . The proposal to excavate the elevated levels of PCBs appears to be premature as Hexcel has failed to horizontally and vertically delineate the elevated levels of PCBs in the southern off-site direction to the NJDEP's RDCSCC and to the non-residential direct contact soil cleanup criteria (NRDCSCC) on-site. However, be advised, that in order to expedite the cleanup of the potential health threat from surficially contaminated PCB soils, the proposal is conditionally acceptable provided Hexcel first delineates the PCB contamination prior to the proposed remediation. Further be advised that the PCB contamination shall be remediated to the NJDEP RDCSCC in the off-site direction. The remediation of the on-site contamination shall be completed in accordance with USEPA rules for PCB disposal (See Section III). Hexcel shall collect post excavation soil samples pursuant to N.J.A.C. 7:26E Technical Requirements for Site Remediation (TRSR).

7. Be advised that Hexcel's failure to include contaminant concentrations and sample depths on the site maps pursuant to the TRSR has led to difficult reviews on the part of the case team. This is unacceptable. Hexcel shall include the contaminant concentrations and sample depths on all future site maps as required pursuant to the TRSR. Additionally, Hexcel shall submit the boring logs for the recent soil samples and for the delineation and post excavation samples required above.

8. Further be advised that, after evaluating the current sample data with data from off-site samples PL-1 and PL-2 from the investigation of the neighboring Napp site, it is evident that Hexcel is also responsible for the contamination detected at these two locations. The investigation was documented in the Napp Technologies, Inc.'s February 22, 1996 Preliminary Assessment Report and the June 20, 1997 Remedial Investigation Report. The samples were collected along the edge of the Hexcel property with sample PL-1 containing 9.6 parts per million(ppm) PCB Aroclor 1248 and PL-2 containing 240ppm PCB Aroclor 1248, both at the 0-6" depth interval. As the depth interval, PCB Aroclor and sample location are consistent with current PCB contamination detected at the Hexcel facility, thus providing evidence of Hexcel's responsibility, Hexcel shall address the off-site contamination at both of these two sample locations pursuant to the TRSR and the requirements stated above.

In addition to the aforementioned sample locations Hexcel may also be responsible for the PCB contamination detected in Napp boring 501 which is located in an area along the edge of the Napp property immediately adjacent to Molnar Road and the Hexcel property and appears to be in direct line with the sample location HA-42. This sample location has not been delineated to the NJDEP's RDCSCC and both locations contain elevated levels of PCB Aroclor 1242 at the 3.5' depth interval. As a part of the delineation of the PCB contamination required above, Hexcel shall determine if the PCB contamination has migrated from the Hexcel site to the location of Napp boring 501. If this investigation concludes that the PCB contamination has migrated to the location of boring 501 then Hexcel shall remediate the area to the RDCSCC. Be advised that the soil investigation which includes this boring is documented in Napp's June 30, 1999 Remedial Investigation Report.

9. Hexcel proposes to address the elevated levels of PCBs detected above 100 ppm via the 2-Phase Extraction system. The proposal is acceptable. However the NJDEP does not agree that removal of contaminated ground water will have much effect on the residual soil concentrations even within the saturated zone. In any event the contamination shall be delineated to the RDCSCC both vertically and horizontally. If ground water sampling after the 2-Phase extraction reveals that additional source removal is necessary, the NJDEP will require further remediation of this area to address the ground water impacts.

AOC 9: Storm Sewer Outfall

10. Hexcel proposes no further action (NFA) based on the potential contribution of other sources and the U.S. Army Corps of Engineers plan to widen and deepen the Saddle River channel as a flood protection measure. The proposal for NFA is unacceptable as there is a much higher concentration of PCBs detected in sediment down gradient of Hexcel's storm sewer outfall than at other locations in the river and Hexcel has failed to substantiate the existence any other potential sources of the PCBs. Hexcel shall submit a proposal to remediate the PCB contaminated sediments detected down gradient of Hexcel's storm sewer outfall.

AOC-10 Industrial Sewer Line

11. The proposal to abandon the existing industrial sewer line is unacceptable. Be advised that it has come to the attention of the NJDEP via an investigation of the industrial sewer line on the adjacent Napp Technologies, Inc. (Napp) site that the sewer line has conveyed discharges of contaminants from the Hexcel facility to the Napp site. The investigation is documented in Napp's June 30, 1999 Remedial Investigation Report. As the investigation on the Napp property has indicated that the sewer line is not intact, Hexcel shall remove the industrial sewer line from its origin to the point on the adjacent Napp property where Napp ties into the line, excavate all contaminated soils encountered during the investigation and collect post excavation samples for PP+40 minus pesticides pursuant to the TRSR. Hexcel shall address all contamination which has emanated from the Hexcel site to the adjacent off-site properties.

12. Be advised, that the industrial sewer line has been an AOC which Hexcel has failed to address even though it has had knowledge of past discharges to this AOC. Furthermore, be advised, that the cleanup and reconditioning of the sewerage system was a requirement of the July 31, 1990 Cleanup Plan Approval. Hexcel's failure to address this AOC will no longer be tolerated by the NJDEP. If Hexcel does not address the industrial sewer line, including all discharges from the sewer line which have impacted the adjacent Napp site, then Hexcel will be in violation of the Industrial Site Recovery Act and appropriate enforcement actions will be initiated.

13. Hexcel shall submit a revised site map which depicts the exact location and extent from origin to discharge point of the entire industrial sewer line and any other underground piping which currently and/or formerly exists at the Hexcel facility.

Historical and any Newly Identified Areas of Concern (AOC)

14. Hexcel shall review all past and present AOCs (including all pits, trenches, catch basins, stained areas etc.), identified by both Hexcel and the NJDEP from the initiation of this ISRA case and submit a discussion on how the 2-Phase Extraction system will address the contamination at the AOC. Furthermore, this discussion shall include all AOCs which have been associated with Fine Organics Corporation ISRA case E97140. If the AOC has received a NFA then Hexcel shall document in which NJDEP letter the NFA was received. If the AOC has never received a NFA determination then the AOC is still considered open and shall be addressed per the TRSR.

Additionally, Hexcel shall evaluate any new discharges at these AOCs which have occurred during Fine Organics' occupancy at the site. The recent PCB sampling has indicated that additional discharges of contaminants have occurred since the last phase of soil sampling undertaken at the site.

Be advised that this review is required due to the extremely long lapse in time in which Hexcel has not completed any soil investigations and the potential for additional discharges which could have occurred since the last phase of soil sampling during the time period in which Fine Organics operated at the site from 1986-1998 . In addition, the review is also required due to Hexcel's decision to rename the site's AOCs without indicating how the previously designated AOCs would be addressed pursuant to the TRSR.

Steam Tunnel

15. The June 1999 Napp report has indicated a discharge from the Hexcel site to the neighboring Napp site via Hexcel's industrial sewer. The NJDEP agrees with this assessment. Therefore, Hexcel shall re-investigate the steam tunnel to determine whether any discharges from the steam tunnel on the Hexcel site have impacted the neighboring Napp site. In addition, Hexcel shall verify that no additional discharges have occurred in the steam tunnel.

Storm Sewer Line

16. As there have been releases to the storm sewer line which traverses the neighboring Napp Technologies, Inc. site via the interconnection with the industrial sewer and also documentation of a discharge from the Hexcel facility to the neighboring Napp site, Hexcel shall address the storm sewer line via the collection of soils samples 0-6" below the base at a frequency pursuant to the TRSR. The sampling shall be completed from the origin of the storm sewer line to its discharge. The soil samples shall be analyzed for PP+40 minus pesticides.

Site Maps

17. Hexcel shall submit all future site maps with contaminant concentrations and sample depths pursuant to the TRSR.

Demolition Debris

18. Hexcel shall submit the disposal documentation for all of the demolition debris removed from the site. Specifically, Hexcel shall document how the PCB contaminated building material from the site was disposed.

NJDEP's May 4, 1993 and October 26, 1993 Letters

19. As Hexcel has not completed any type of soil investigation for numerous years prior to the submission of the November 23, 1999 RAW addendum Hexcel shall verify that all of the requirements of the NJDEP's May 4, 1993 and October 26, 1993 letters have been addressed. At a minimum, Hexcel shall provide an item by item response addressing the requirements of each of these letters.

AOC designations

20. Hexcel shall be advised that when changing an AOC designation a cross reference to the historic AOCs shall be completed. Hexcel shall submit this cross reference with the next report.

Transformer

21. Be advised that NJDEP's September 15, 1994 letter requested information concerning a transformer identified in the NJDEP's September 15, 1986 Report of Inspection and Hexcel letter dated October 20, 1986 as a potential source of PCB contamination. Hexcel has failed to submit this information. This is unacceptable. Therefore, Hexcel shall document how the transformer has been addressed pursuant to the TRSR and whether this transformer is a source for any of the PCB contamination detected on site.

II Ground Water Comments

Interim Water Elevation and LNAPL/DNAPL Monitoring and Recovery

Hexcel indicates that it is still performing the product monitoring and recovery program that the NJDEP approved as an interim remedial measure. Hexcel also submits a quarterly water elevation and product measurement table for February 1999 as required by the NJDEP.

NJDEP Comments:

1. The most recent quarterly product monitoring and recovery data received by the NJDEP is that for the second quarter of 1999. Hexcel shall clarify whether it is still performing the interim program and shall submit any and all outstanding monitoring and recovery data. Note that in the December 14, 1999 letter, the NJDEP approved Hexcel's July 27, 1999 proposal to continue performance of the interim product monitoring and recovery program and indicated that Hexcel must continue the program until it implemented the final remedial plan.

Horizontal Delineation of VOCs and PCBs (Includes Hexcel's AOC2)

Hexcel believes that additional ground water sampling to the south of Molnar Road is not necessary to achieve delineation of contamination related to the Hexcel site, based on the July 1998 ground water sampling results. Hexcel recalls that MW22, MW23 and MW24, located in Molnar Road, were sampled for VOCs and PCBs during the July 1998 round. Hexcel believes that ground water quality at each of these wells had improved significantly as of July 1998. Specifically, Hexcel reports that total target VOC concentration in MW22 decreased to about 1 ppm from a 1993 concentration of 405 ppm and that total target VOC concentration in MW23 decreased to less than 100 ppb from a 1995 concentration of 24 ppm. Hexcel reports that in MW24, the only compound detected in July 1998 was chlorobenzene, detected below the NJDEP's Ground Water Quality Standards (GWQS).

Hexcel also recalls that access to MW25, a Hexcel well located on Napp property, and to MWE8, a Napp well located on Napp property, was denied by Napp for the July 1998 sampling round. Hexcel notes that regardless, in January 1997 MWE8 contained a total VOC concentration of only about 20 ppb.

As required in the NJDEP's December 14, 1999 letter, Hexcel provides a copy of a July 21, 1998 letter that Hexcel sent to Napp wherein Hexcel requests access to sample MW25 and MWE8 on July 30, 1998. Hexcel reports that it followed the request with a number of telephone calls and that Napp denied the requested access during a July 30, 1998 telephone call.

Hexcel also provides a copy of an August 11, 1998 letter that Hexcel sent to Napp wherein Hexcel provides July 16, 1998 water elevation data for MW25 and MW31 (another Hexcel well located on Napp property.) In this letter, Hexcel documents that it has been forwarding quarterly water level data for the two wells to Napp in accordance with a site access agreement. Hexcel documents in the letter that during recent efforts to obtain access to sample one of the two wells, Napp informed Hexcel that the access agreement was no longer valid.

Also as required in the NJDEP's December 14, 1999 letter, Hexcel provides shallow well and deep well isoconcentration maps for the 1998 ground water sampling results. Specifically, Hexcel presents shallow isoconcentration maps for total target VOCs, selected individual VOCs and PCBs, and deep isoconcentration maps for total target VOCs and selected individual VOCs. Hexcel explains that PCB detections in deep wells were insufficient to create PCB contours.

NJDEP Comments:

2. The NJDEP acknowledges that the volatile organic compound (VOCs) concentrations in MW22 and MW23 were lower during the July 1998 round than they had been in previous rounds and that to date, MW24 has not contained significant contamination. Whether the data from the three wells was representative of ground water quality along the entire southern property boundary during July 1998 is not clear. Regardless, historical ground water quality data and ground water flow direction data for the Hexcel site and similar data submitted by Napp for its site (refer to Napp's June 1999 RIR/RIW Addendum) suggest that a certain amount of contamination has migrated from the Hexcel property onto the Napp site.

In Napp's June 1999 RIR/RIW, as far as the NJDEP understands, Napp attributes at least the following contamination to an origin at the Hexcel site:

VOCs and PCB 1242 in MW-E7;
VOCs in MW-E7D;
VOCs in MW-E13;
LNAPL in MW-E14;
PCB 1242 in MW-E9;
Certain VOCs in MW-E1, MW-E5, MW-E6, MW-E9 and MW-E12.

Napp believes that the LNAPL in MW-E14, the PCB 1242 in MW9 and the VOCs in wells MW-E1, MW-E5, MW-E6, MW-E9 and MW-E12 in particular migrated onto the Napp site along the industrial sewer line.

The NJDEP has requested further clarification from Napp on its position regarding this issue, but believes that Napp's conclusions may be correct for the most part. If these contaminants did originate at the Hexcel site, Hexcel will be responsible for ensuring that they are delineated and remediated. Hexcel shall address this issue.

3. MW21 contained significant VOC contamination when sampled in July 1998. Hexcel shall submit a proposal for horizontal delineation of the VOC contamination in this well.

4. MW32B, CW-1, CW-2 and CW3 were not sampled in July 1998, but contained significant VOC contamination the last time that they were sampled. Hexcel shall sample these wells for VOCs to determine whether horizontal delineation of the contamination in them is necessary.

5. Hexcel shall attempt to renew its access agreement with Napp so that it can sample wells on Napp property and measure water elevations there as necessary.

Vertical Delineation of VOCs and Investigation of Silt Layer in the area of MW26 (Hexcel's AOC4)

Hexcel proposes to install five borings through the floor of former Building 2 to investigate the extent of the silt layer beneath it and to investigate the presence of dense non aqueous phase liquids (DNAPL). Hexcel proposes to advance the borings to a maximum depth of 22 feet, based on the depth at which the silt layer has been encountered at wells in the vicinity. If the layer is encountered above a depth of 22 feet the borings will be terminated at the top of it.

Continuous sampling will be performed throughout each boring for visual inspection and field screening. The material directly above the silt layer, if encountered, as well as directly above the concrete basin believed to underlie the building above the silt layer will be examined carefully for the presence of DNAPL.

Hexcel proposes to install one or two monitoring wells for vertical definition of the contamination beneath former Building 2 based on the results of the boring investigation.

If the silt layer is encountered at the boring near MW26, but a significant difference (greater than one foot) is found between the bottom of MW26 and the top of the silt layer at this boring, an additional shallow well will be installed at that location to monitor conditions directly above the silt. If the boring closest to MW26 encounters the silt layer but reveals that MW26 is set close (less than one foot) to the top of the silt, an additional shallow well will be considered unnecessary at this location and will not be installed. Also, if the silt layer is encountered in the other borings, Hexcel will install a shallow well at the boring with "the highest depth to the silt layer form the ground surface."

If the silt layer is not encountered during the boring program, then the contamination in MW26, which Hexcel indicates would at that point be considered representative of the lower aquifer, will be vertically delineated through installation of a deeper well constructed with a screen set across the interval screened by deep well MW7. Hexcel suggests that an absence of the silt layer would indicate that the construction fill for the subsurface structure extended through the confining layer. Hexcel would select a worst-case location for this deep well based on the visual inspection and field screening conducted during the boring program

NJDEP Comments:

6. Hexcel's proposal is acceptable but additional investigation may be required based on the results, especially if a breach is identified in the silt layer.

7. As indicated further below, active remediation of this area of the site is required given the concentrations of VOCs detected in MW26, RW6-1, RW6-2 and RW6-3. Hexcel has indicated that it must perform additional subsurface investigation in each of the areas targeted for 2-Phase Extraction in order to design the extraction systems for the areas. Assuming that Hexcel will address this area with 2-Phase Extraction, the NJDEP assumes that the same level of subsurface characterization will be required here as well.

Delineation of DNAPL Beneath Saddle River

As required, Hexcel provides the logs for the nine soil borings (ST1-ST9) that it advanced through the bed of the Saddle River in 1998 to address the NJDEP's concern about migration of DNAPL beneath Saddle River in the area of MW8. The logs indicate that borings ST1-ST4 and ST7-ST9 encountered the silt layer at depths ranging from 4 feet to approximately 6.5 feet below the stream bed. Logs indicates that borings ST5 and ST6 both extended to a depth of 6.5 feet below the stream bed but neither encountered the silt layer.

The logs indicate that PID readings registered in four of the nine borings, including the three that had been advanced closest to the stream bank (ST1, ST6 and ST9) and that were subsequently found to contain the most significant VOC contamination, and a fourth (ST5) located closer to the middle of the stream. The logs also indicate that all of the soil samples, which reportedly had been collected based on the PID readings, were collected from a six-inch interval directly above, and in some cases partially within, the silt layer, where applicable.

NJDEP Comments:

8. Based on the results of the soil sampling, further investigation of ground water quality across the Saddle River from the Hexcel site is not required at this time. The results of the soil samples that Hexcel collected under the river suggest that DNAPL has not migrated under the river in the area of MW8 and nearby control wells where it has been detected. Specifically, the VOC concentrations detected in the transect of soil samples collected immediately adjacent the Hexcel site (roughly 2 ppm to 6 ppm total target VOCs, mostly chlorobenzene) were not indicative of product, and the samples collected furthest from the site contained no VOCs at all. Additional investigation of contaminant migration under the river may be required in the future if data collected during pre-remediation activities at 2-Phase Extraction target area AOC1E warrants it.

Bedrock Investigation Near MW1 (Hexcel's AOC7)

Hexcel agrees to install a bedrock well near MW1. Hexcel proposes to install the well directly after the remediation of shallow overburden contamination in AOC1A, proposed below.

NJDEP Comments:

9. Hexcel's proposal is acceptable.

BNAs and PPM in Ground Water and Soil (Includes Hexcel's AOC3)

Hexcel believes that base neutral and acid extractable compounds (BNAs) and priority pollutant metals (PPM) are not of significant concern in soil or ground water based on historical data. Hexcel notes, specifically, that no known sources of metals contamination are present at the site.

Hexcel provides tables of all historical RDCSCC BNA and PPM exceedances in soil. The BNA results table shows that to date, four soil samples have contained one BNA exceedance, each, [bis(2-ethylhexyl)phthalate, benzo(a)anthracene or 2,6-dinitrotoluene] and that each exceedance was a minor exceedance of only the RDCSCC. The PPM results table shows that to date, seven soil samples have contained one or two metals (antimony, beryllium, cadmium, mercury, or thallium) above RDCSCC, the most stringent SCC, and that in all but one case the exceedance was within the same order of magnitude as the standard. Figures of the locations of soil samples analyzed for BNAs and PPMs and the locations of the referenced exceedances are provided.

Hexcel also provides tables of all historical BNA and PPM GWQS exceedances in ground water. The BNA results table shows that to date, shallow wells MW8, CW3, CW11 and CW12 have contained BNA exceedances not attributable to cross contamination. Various BNAs have been detected above GWQS in the four wells, primarily phenols, and concentrations have ranged up to

two orders of magnitude above GWQS. Concentrations have been highest in CW3. The PPM results table shows that to date, seventeen shallow wells and two deep wells have each contained one to eight metals above GWQS (arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, and nickel.) Concentrations have ranged up to two orders of magnitude above GWQS.

Hexcel proposes to perform additional ground water sampling for BNAs and PPMs in order to evaluate the potential impact of BNAs and PPMs on surface water and consequently, the need to sample surface water for these parameters as discussed further below, and in order to evaluate the need for post-remediation ground water sampling for BNAs. Specifically, Hexcel proposes to sample all shallow monitoring wells adjacent the river (MW8, MW10, MW14 and MW28) and two of the control wells adjacent the river (CW11 and CW12) for BNAs and PPMs and proposes to sample control well CW3, which is not located next to the river, for BNAs alone.

Hexcel proposes to evaluate the impact of turbidity on metals results by collecting all metals samples using the low flow purge method, and by collecting both filtered and unfiltered low flow samples as Hexcel does not expect even low flow samples to be completely free of particulates. Hexcel acknowledges that only results from unfiltered metals samples will be used by the NJDEP to evaluate GWQS exceedances.

Hexcel proposes to conduct all low flow sampling in accordance with EPA's *Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling* dated March 16, 1998. Hexcel reports that in accordance with EPA procedure, each well will be purged at a rate of between 100 to 500 milliliters per minute to maintain a steady flow rate without exceeding 0.3 feet of drawdown. Also, because the wells that will be sampled for metals have short screen lengths (10 feet and less) Hexcel proposes to purge and sample from the mid-point of the saturated screen at each well.

Hexcel indicates that it will measure pH, temperature, DO, Eh and conductivity to determine when a well has stabilized and will measure these parameters using a flow through cell and a turbidity meter. In accordance with the EPA procedure, a well will be considered ready for sample collection when indicator parameters have stabilized for three consecutive readings as follows:

+/- 0.1 for pH ;
+/- 3% for conductivity;
+/- 10 mV for redox potential;
+/- 10% for dissolved oxygen and turbidity.

Also, in accordance with the NJDEP's requirements, Hexcel will purge at least twice the volume of the sampling equipment.

Hexcel indicates that the BNA samples may or may not be collected at the same time that the PPM samples are collected. Hexcel proposes to use a peristaltic pump with dedicated tubing to purge wells and to collect the metals samples unless BNA samples are collected at the same time, in which case a non-dedicated centrifugal pump will be used. Hexcel would follow EPA procedures for pump decontamination.

NJDEP Comments:

10. As indicated in the NJDEP's December 14, 1999 letter, Hexcel's proposal to sample MW8, MW10, MW14, MW28, CW11 and CW12 for BNAs and PPMs in order to determine the need for sampling Saddle River for these parameters is acceptable. Hexcel shall see Condition No. 12, below, for further comment on the proposed PPM sampling.

11. While the BNA sampling that Hexcel proposes to perform includes all wells that have contained BNA concentrations above GWQS to date (MW8, CW3, CW11 and CW12), it is not

clear that resampling of only these wells and several others next to the river would reveal the actual present extent of BNA GWQS exceedances at the site. Specifically, the historical BNA sampling results on which the proposal has been based are now outdated and were not confirmed through resampling in most cases. Therefore, while the NJDEP acknowledges that BNA contamination appears to be less of a problem at the site than VOC contamination, Hexcel must still collect a representative site-wide round of samples for BNAs to ensure that the extent of BNA contamination at the site is understood and that all sources of BNA contamination will be, or have been, removed.

The NJDEP expects that the proposed 2-Phase Extraction would reduce BNA concentrations and BNA source material to some extent, and observes that 2-Phase Extraction has been proposed for a significant portion of the site (MW8 and MW12 are located within proposed target area AOC-1E, CW-11 is located near AOC-1E and CW-3 is located near proposed target area AOC1A.) Therefore, as the NJDEP indicated in the December 14, 1999 letter, if Hexcel believes that the proposed remedial actions will remove all BNA source material at the site, the NJDEP will accept Hexcel's BNA sampling proposal as is. If Hexcel believes that the proposed remedial actions will not remove all BNA source material at the site, Hexcel shall propose to sample a representative selection of wells for BNAs so that Hexcel can plan any necessary remediation. Also, unless Hexcel samples a representative selection of wells for BNAs and demonstrates that BNAs in ground water are no longer of concern, post-remedial sampling for BNAs at representative wells at an appropriate time shall be proposed.

12. Hexcel shall more clearly specify what it believes are the source(s) of the metals historically detected above GWQS at the site, even if Hexcel believes that the detected concentrations were related to turbidity. As the NJDEP advised Hexcel in the December 14, 1999 letter, if Hexcel can demonstrate that a particular metal detected in ground water above GWQS is the result of historic fill or is naturally occurring, the NJDEP will not require any further ground water sampling, surface water sampling or remediation to address that metal (at most inclusion of the affected area in a CEA would be required.) If Hexcel cannot support a contention that a particular metal historically detected above GWQS is related to historic fill or is naturally occurring, then Hexcel shall propose to sample a representative selection of wells for that metal so that Hexcel can plan any necessary remedial action; sampling for that metal at only wells along the river would not be sufficient in this case.

13. Hexcel's proposal to sample ground water for PPMs, and possibly for BNAs, by using EPA low flow procedures is acceptable.

Remediation of NAPL and VOCs in Ground Water and Soil (Hexcel's AOC1 and AOC5)

Hexcel summarizes that DNAPL comprised of chlorinated solvents, light non-aqueous phase liquids (LNAPL) comprised of fuel oil and gasoline, and soil and ground water contaminated with VOCs are present at the site.

Hexcel provides a table of all historical NJDEP Impact to Ground Water Soil Cleanup Criteria (IGWSCC) VOC exceedances detected in soil. According to the table, VOCs detected in soil above IGWSCC have included numerous chlorinated compounds and xylene. The concentrations of the individual VOCs detected above IGWSCC have generally ranged up to the tens to thousands of parts per million.

According to the table, the IGWSCC exceedances have been detected at depths ranging largely from 0.5 feet below grade (b.g.) to 6.5 feet b.g., however some exceedances were detected between 7 feet b.g. and 15 feet b.g. Hexcel concludes that at borings where samples have been taken at various depths, concentrations generally increase with depth as Hexcel indicates would be expected of DNAPL-related contamination.

Hexcel provides a figure that shows all of the soil borings that have been sampled for VOCs and that shows which of the borings contained the tabulated IGWSCC exceedances at some depth. Hexcel concludes that VOCs detected in soil are limited to the former areas of USTs and ASTs.

Hexcel also provides tables of all historical VOC ground water sampling results for shallow wells and deep wells. According to the table and as previously established, numerous chlorinated compounds and BTEX are present in ground water above GWQS. Total target VOC concentrations per well have ranged up to the hundreds of parts per million in shallow wells and up to the single parts per million in deep wells. Hexcel concludes that dissolved VOCs have been delineated sufficiently to implement a remedial action.

To address the NAPL and VOCs in ground water and soil, Hexcel proposes to perform a program of 2-Phase Extraction in specific source areas. Hexcel explains that 2-Phase Extraction is a remedial process patented by Xerox and developed for remediation of VOCs in soil and ground water. Hexcel's consultant reports that it assisted in the development of the technology and provides references for successful 2-Phase Extraction programs that it has performed.

During the process a high vacuum is applied at a well to extract both liquid and vapor. Hexcel indicates that it selected 2-Phase Extraction because it can remove free and residual DNAPL and LNAPL, contaminated ground water and contaminants sorbed to soil simultaneously from a single area. Hexcel describes various other advantages that the technology provides that result in accelerated site remediation and reduction of project costs. Hexcel also reports that it performed 2-Phase-Extraction pilot tests at wells CW5 and MW17 in the southwest corner of the site (proposed remedial area AOC1A below) and that the testing indicated successful contaminant removal.

Hexcel indicates that much of the VOC contamination in the ground water is transferred to the vapor phase during the extraction process. Hexcel still expects recovered ground water to require treatment and intends to treat it by air stripping, granular activated carbon, and filtering.

Treated ground water will be discharged to the Passaic Valley Sewerage Commissioners (PVSC) sewer line. Hexcel indicates that its existing discharge permit was terminated in November 1998 at the request of PVSC when the ground water treatment system was dismantled. Hexcel reports that it has initiated the process of obtaining a new discharge permit. Also, Hexcel reports that a Treatment Works Approval will be required because the discharge to the PVSC is expected to exceed 8,000 gpd

Hexcel will treat vapor from the 2-Phase Extraction system and from the ground water air stripper and will discharge it to the atmosphere. Hexcel indicates that a new permit will be required for emissions from the 2-Phase Extraction system. Hexcel indicates that a temporary permit that it already possesses for emissions from its existing air stripper can be modified to permit emissions from it when it is relocated from the basement of Building 1 to the warehouse. Hexcel reports that it has initiated the air permitting process.

Hexcel also indicates that application of Hydrogen Release Compound (HRC), a proprietary compound marketed by Regenesis Bioremediation Products, may be proposed as a polishing step. Hexcel indicates that HRC is a food quality polyacetate ester that is capable of enhancing natural degradation of dissolved chlorinated solvent plumes. Hexcel's consultant provides a reference for its application of HRC at another ISRA site. Hexcel will assess the need for HRC application upon completion of 2-Phase Extraction at the site.

Hexcel has targeted six source areas (AOC1A through AOC1F), described below, for remediation by 2-Phase Extraction. Hexcel indicates that these source areas include areas of DNAPL and LNAPL as observed from ground water and product monitoring, and areas of VOC IGWSCC exceedances in soil. Hexcel indicates that former Building 2 will also be targeted for remediation

by 2-Phase Extraction if shown necessary by the results of the investigation proposed for that area.

Hexcel indicates that some of the targeted source areas adjoin each other, but have been divided into separate areas to accommodate application of 2-Phase Extraction. In the final design of the system, Hexcel may combine some of these areas.

AOC1A - Area close to the intersection of Main Street and Molnar Road

Hexcel reports that high methylene chloride concentrations have been detected in ground water in this area.

AOC1B - Area to the east of former Building 2

Hexcel reports that VOC IGWSCC and GWQS exceedances have been detected in soil and ground water in this area. Hexcel reports that neither LNAPL nor DNAPL has been detected in wells here but that MW4 and MW27 have typically contained very high concentrations of VOCs (over 100 ppm.)

AOC1C - Area of the basement pit and adjoining areas of soil contamination

Hexcel reports that the basement pit has been recognized as an area of concern because of the presence of DNAPL beneath the floor slab. Hexcel recalls that one of the well points in the basement was used for DNAPL recovery until recently, when the basement was secured with steel plates as part of demolition activities.

Also, in response to an NJDEP December 14, 1999 requirement, Hexcel reports that the seepage historically recovered from the basement of Building 1 was collected on the floor of the basement and not from within a pit set into the floor of the basement.

AOC1D - Area to the west of former Building 2

Hexcel reports that free product has been observed and recovered from wells in this area. Hexcel specifies that MW6, which is located in this area, is the only well that has consistently contained DNAPL over the past few years. Hexcel reports that ASTs were once located in this area and that soil sampling has indicated elevated concentrations of VOCs.

AOC1E - Area close to Saddle River property boundary

Hexcel reports that product monitoring has indicated the presence of DNAPL in some of the wells located along Saddle River. Hexcel notes that remediation of this source area is important for protection of Saddle River.

AOC1F - Vicinity of CW7

Hexcel reports that while no LNAPL has been detected in CW7 for almost a year, substantial LNAPL has been recovered from this well historically. Hexcel indicates that remediation of this source area will result in an improvement of ground water quality at down-gradient well MW10, which is located at the Saddle River property boundary.

Hexcel proposes to implement the 2-Phase Extraction at the six source areas in a stepwise approach, starting at AOC1A, the most up-gradient area, and proceeding to the furthest down-gradient area.
Hexcel proposes to perform the 2-Phase Extraction program described below after completing the ground water and surface water investigations proposed above, and after completing the removal of shallow PCB soil contamination.

Before installation of the 2-Phase Extraction system in a given area, Hexcel will advance borings in the area to collect information about the subsurface necessary to design the extraction system for the area. Hexcel also reports that it is evaluating the need to perform an extended 2-Phase Extraction pilot test to collect data in each of the targeted areas.

During the design phase for each area, Hexcel will determine the need for installation of a containment structure, such as one constructed of sheet piling, to confine the applied vacuum to the target area. Also, while existing wells will be converted for use as extraction wells, Hexcel will evaluate the need for installation of additional extraction wells and monitoring wells during the design phase for each area.

Hexcel presents a map of the extraction well layout already designed for AOC1A. Hexcel's map shows that extraction will be performed at CW4, CW5, MW17 and MW18 and at up to four additional vapor extraction wells (VE-1 through VE-4.) Hexcel suggests that installation of a containment structure in this area has been determined necessary based on the results of the 2-Phase Extraction pilot testing that was performed in this area.

Before starting the 2-Phase Extraction in a given area, Hexcel will sample ground water at approximately six to eight wells in and around the area and will analyze the samples for VO+10 and PCBs to establish a pre-remediation baseline.

During operation of the 2-Phase Extraction system in a given area, Hexcel will measure parameters such as ground water flow, vapor flow, and vacuums, pressures and temperatures throughout the system. Hexcel will collect measurements once or twice per week at first and will then reduce collection to a weekly then a monthly frequency. Using the data, Hexcel will optimize system performance by cycling extraction wells on and off as necessary, with wells alternately functioning as extraction wells and observation wells.

Hexcel will also analyze recovered ground water and vapor for VOCs during operation of the 2-Phase Extraction system in a given area, in order to monitor mass removal rate, treatment efficiency and carbon loading. The sampling frequency and analytical methods will comply with the permit requirements.

During operation of the 2-Phase Extraction system in a given area, in order to determine the effectiveness of the operation Hexcel will monitor ground water quality and NAPL at the wells included in the baseline sampling. Samples will be collected quarterly at first, then semi-annually, and will be analyzed for VOCs. The NAPL observations will be made with an interface probe and will be made during weekly site visits.

To supplement the monitoring well data collected for a given area, and to verify that it is representative of the area, Hexcel will at some point use an alternative sampling technique, such as advancement of temporary well points, to sample ground water for VOCs and to investigate the presence of DNAPL in that area.

During operation of the 2-Phase Extraction system in a given area, Hexcel will also measure ground water elevations in the area to evaluate the capture zone being created by the extraction.

Furthermore, Hexcel will monitor all lower aquifer wells for VOCs during the entire remedial process in order to evaluate the success of the remediation. In response to the NJDEP's December 14, 1999 letter, Hexcel notes that VOC concentrations in MW3 will be monitored at part of this program. Hexcel will also include the proposed bedrock well in the monitoring program once it has been installed.

When VOC concentrations in the ground water and vapor extracted from a given area display an asymptotic decrease, Hexcel will terminate the 2-Phase Extraction operation in that area. The

containment structure for the area, if applicable, will then be removed. Hexcel estimates that 2-Phase Extraction will be conducted for an average of 9 months in each of the source areas.

Hexcel believes that the goals of the proposed active remedial program are consistent with the remedial requirements issued by the NJDEP in its May 27, 1998 letter. Hexcel suggests that the active remediation proposed above will continue until:

All free product (LNAPL and DNAPL) has been removed;
Concentrations of individual VOCs in ground water are less than 1% of the compounds' solubilities;
No increasing VOC concentration trend is evident in the lower overburden aquifer;
No increasing VOC concentration trend is evident in monitoring wells along the Saddle River [assuming surface water complies with SWQC at that time.]

Hexcel believes that upon completion of the remedial actions proposed above, site related sources will have been removed or contained sufficiently to enter into a natural remediation monitoring program and to apply institutional and engineering controls.

NJDEP Comments:

14. Hexcel's proposal to use 2-Phase Extraction and possibly HRC to attempt to remediate VOC ground water contamination and its sources is acceptable. The proposed actions will not provide containment of source material but are acceptable because they are intended to remove the source material within a reasonable amount of time. If adverse impact to a receptor such as surface water or unacceptable contaminant migration is identified or predicted to occur during the 2-Phase Extraction, additional measures such as acceleration of the source removal program or hydraulic containment will be required.

15. Hexcel shall perform active remediation such as 2-Phase Extraction in the area of MW26, RW6-1, RW6-2 and RW6-3, and in the area that extends from this area to MW21, given the concentrations of VOCs that have been detected in these five wells. Hexcel may need to remediate the area of MW26, RW6-1, RW6-2 and RW6-3 toward the beginning of its remedial program given its proposed strategy of remediating up-gradient areas first.

16. Hexcel shall evaluate the need to actively remediate other areas of the site on the basis of the horizontal delineation and resampling of wells required above.

17. Hexcel shall evaluate the need to incorporate areas of the Napp property into its remedial program (with respect to both active remediation and monitoring) based on the evaluation of data for the Napp site required above.

18. Once Hexcel has finalized the 2-Phase Extraction system design for a given area, Hexcel shall submit a proposal for the system for review and approval. In the proposal Hexcel shall provide an illustration of the area that is to be remediated, shall indicate the depth to which the remediation will extend, shall indicate the wells that will be used for extraction and ground water monitoring and shall provide the elevations of the wells' screened intervals with respect to the water table and the silt layer.

19. Hexcel shall submit a proposal to perform a site-wide, upper aquifer water quality and product monitoring program during the course of the 2-Phase Extraction program. This monitoring must be performed in addition to the shallow well monitoring that Hexcel has proposed to perform in each target source area as each area is remediated.

20. Discontinuation of the previously approved interim product recovery program may be acceptable, however, Hexcel shall continue to recover any and all significant product accumulations in wells located next to Saddle River during the 2-Phase Extraction program.

Hexcel shall ensure that the monitoring program required above includes monitoring of those wells located next to the river that have historically contained product.

21. Hexcel shall propose a sampling frequency for the lower aquifer overburden and bedrock monitoring that will be performed during the 2-Phase Extraction program.

22. Hexcel's proposal to terminate 2-Phase Extraction at a given area when VOC concentration trends in recovered ground water and vapor display an asymptotic decrease is acceptable provided product is not evident in any well in the target area at that time, and provided the concentrations of each compound detected in monitoring wells in the area at that time are below 1% of the compound's effective solubility. If concentrations rebound after cessation of the 2-Phase Extraction or product reappears, active remediation of the area shall be resumed. Pursuant to the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-6.1(d) "***Free and/or residual product*** determined to be present pursuant to N.J.A.C. 7:26E-2.1(a)11 *shall* be treated or removed when practicable, or contained when treatment or removal are not practicable." At N.J.A.C. 7:26E-2.1(a)11i, the Technical Requirements for Site Remediation specify "...free and/or residual product *shall* be considered to be present if the contaminant is detected in ground water at concentrations equal to or greater than one percent of the water solubility of the contaminant if ground water contains only that organic contaminant. If a mixture of such contaminants is present, then the effective water solubility of the contaminant shall be estimated for this determination;"

23. Once Hexcel has fully delineated the extent of site related ground water contamination Hexcel shall submit a proposal for establishment of a CEA. The CEA shall pertain to all site-related GWQS exceedances including, but not necessarily limited, to VOCs. The boundaries of the CEA may coincide with the known extent of contamination at that time, and the duration may be indefinite. Revision of the CEA will be required at some time after completion of active remediation.

Remediation of PCBs in Soil and Ground Water (Hexcel's AOC6)

Hexcel summarizes that PCBs have been detected in both soil and ground water as well as in the DNAPL and LNAPL that is present at the site.

Hexcel provides a table of all PCB soil sampling results obtained to date and highlights those concentrations above 100 ppm According to the table, total PCBs per soil sample have ranged up to 26,000 ppm.

According to the table, total PCB concentrations above 100 ppm have been detected at depths ranging from the ground surface to 16 feet b.g. Hexcel recognizes these concentrations as occurring within the upper two feet of soil and at depths below 5 feet. Hexcel notes that while various aroclors have been detected, the shallower exceedances are mostly 1248 and the deeper exceedances are mostly 1242.

Hexcel provides a figure that shows all of the borings that have been sampled for PCBs and that shows which of the borings have contained PCBs at concentrations above 100 ppm. Hexcel concludes that the PCB concentrations above 100 ppm detected within the upper two feet of soil are limited to an area close to the former boiler room and that the PCB concentrations above 100 ppm detected below five feet occur in a few isolated locations and are primarily related to DNAPL..

Hexcel also provides tables of all historical PCB ground water sampling results for shallow wells and deep wells. According to the table and as already established, PCBs have totaled up to 2,170 ppb per well in shallow wells and up to 1.5 ppb per well in deep wells. Aroclors were limited to 1242 and to a less extent 1248.

Hexcel concludes that relatively low concentrations of PCBs have been detected in ground water because of the tendency of PCBs to adsorb to soil. Hexcel recalls that an affinity of PCBs for soil particles was demonstrated earlier in the site investigation through analysis of both filtered and unfiltered ground water samples from selected wells.

Hexcel proposes to address the deep PCB soil contamination for the purpose of protecting ground water. Specifically, Hexcel indicates that the deeper PCB soil contamination falls within the areas proposed to be addressed by 2-Phase Extraction, and that through removal of ground water and NAPL during the 2-Phase Extraction, mobile PCBs will be contained and PCB concentrations will be reduced.

Hexcel proposes, therefore, to reevaluate the PCB concentrations in soil at depth with respect to their impact on ground water quality after implementation of the 2-Phase Extraction. Hexcel will remove additional PCB contamination, if necessary, at that time. A petition for a risk-based alternate standard will be submitted to the regional USEPA administrator and to the NJDEP case manager for consideration if PCBs exceed accepted levels after completion of the necessary remediation.

NJDEP Comments:

24. Hexcel's proposal to attempt to eliminate the sources of the PCBs in ground water through 2-Phase Extraction is acceptable. The NJDEP notes that all of the wells that were found to contain significant PCB contamination are located within areas targeted for 2-Phase Extraction.

25. Hexcel has not provided a proposal for further sampling of ground water for PCBs. Hexcel shall propose to collect post-remedial samples for PCBs from representative wells at an appropriate time. Hexcel may want to consider using the low-flow technique for the required sampling. Only unfiltered samples will be used for comparison to the GWQC.

Saddle River (Hexcel's AOC8 and AOC9)

Hexcel proposes to evaluate potential impacts to Saddle River by conducting an inspection for stressed vegetation along the river bank and in unpaved portions of the site, and by performing surface water analysis and sediment evaluation and analysis. Hexcel suggests that the proposed actions constitute the baseline ecological evaluation as well as the remedial ecological investigation required by the Technical Requirements for Site Remediation.

Surface Water

Hexcel agrees to sample surface water at the locations required by the NJDEP. Hexcel proposes to analyze samples for VOCs and PCBs and, as indicated above, to include analysis for BNAs and PPMs if appropriate based on the proposed BNA and PPM ground water analyses. Hexcel specifies that if BNA or PPM concentrations exceed GWQC in wells located along the Saddle River, surface water samples will be analyzed for BNAs and PPMs.

NJDEP Comments:

26. Hexcel's proposal is acceptable with the condition that exceedance of the more stringent of the State SWQC and the Federal SWQC in monitoring wells next to Saddle River be used to trigger surface water sampling for BNAs and PPMs and not exceedance of the GWQC, consistent with the Technical Requirements for Site Remediation at N.JA.C.7:26E-3.8(a)4.

27. Hexcel indicates that Saddle River's FW-2 designation denotes that it is not presently used for potable purpose. Hexcel is advised that an FW-2 designation does not denote whether a surface water body is used for potable purpose. Hexcel is referred to the Surface Water Quality Standards at N.J.AC. 7:9B-1.12(c) for the designated uses of FW2 waters.

Production Well (Hexcel's AOC11)

Hexcel reports that its on-site production well is 240 feet deep and is cased to 38 feet. Hexcel reports that the well has not been used since operations at the site ceased. Hexcel proposes to abandon the well.

NJDEP Comments:

As reported in the July 2, 1992 Bedrock Aquifer Characterization Report, the production well was packer- sampled in April 1992. Samples were analyzed for VOC+15. TCE was detected at up to 76 ppb, TCE at up to 6 ppb, toluene at up to 21 ppb and MTBE at up to 2 ppb.

28. Hexcel shall submit a proposal to resample the well. If the well is not contaminated, it may be sealed. If the well is contaminated, a proposal to address the contamination will be required.

III Other Technical Requirements

USEPA Rules for PCB Disposal

1. Please be advised that the United States Environmental Protection Agency (USEPA) has issued final rules for disposal of Polychlorinated Biphenyls (PCBs). These rules appeared in the Federal Register on June 29, 1998 (Volume 63, Number 124).
In order for the NJDEP to approve a remediation including PCBs, Hexcel shall provide documentation that it has complied with these rules.

To review the referenced rules please refer to the following Internet address:
www.epa.gov\fedrgstr\EPA-TOX\1998\June\Day-29\t17048.htm

Be advised that according to the rules any remediation which is intended to leave PCBs at levels of 100 ppm or more must be reviewed and approved by the USEPA.

Baseline Ecological Evaluation

2. Hexcel proposes to conduct and ecological evaluation pursuant to the Technical Requirements for Site Remediation 7:26E-3.11 and 4.7. The proposal is acceptable.

IV General Requirements

1. Hexcel shall submit the results or additional work plans, in triplicate. Please note that only one copy of the Quality Assurance/Quality Control Deliverables is needed.

2. Hexcel shall submit a revised Remedial Action Schedule, pursuant to N.J.A.C. 7:26E-6.5, for NJDEP approval which includes all tasks associated with the remediation of the site within thirty (30) calendar days of the receipt of this letter.

3. Hexcel shall submit summarized analytical results in accordance with the Technical Requirements For Site Remediation (TRSR), N.J.A.C. 7:26E.

4. Hexcel shall collect and analyze all samples in accordance with the sampling protocol outlined in the May, 1992 edition of the NJDEP's "Field Sampling Procedures Manual" and the TRSR, N.J.A.C. 7:26E.

5. Hexcel shall notify the assigned BEECRA Case Manager at least 14 calendar days prior to implementation of all field activities included in the Remedial Action Workplan. If Hexcel fails to initiate sampling within 30 calendar days of the receipt of this approval, any requests for an extension of the required time frames may be denied.

6. Pursuant to the TRSR, N.J.A.C. 7:26E-3.13(c)3v, all analytical data shall be presented both as a hard copy and an electronic deliverable using the database format outlined in detail in the current HAZSITE application or appropriate spreadsheet format specified in the NJDEP's electronic data interchange manual.

For further information related to electronic data submissions, please refer to the Site Remediation Program's (SRP's) home page at the following internet address: **http://www.state.nj.us/dep/srp.** The **Regulations and Guidance** page of this web site has a section dedicated to HazSite which includes downloadable files, an explanation of how to use these files to comply with the NJDEP's requirements, the SRP's Electronic Data Interchange (EDI) manual, and **Guidance for the Submission and Use of Data In GIS Compatible Formats Pursuant to "Technical Requirements for Site Remediation".**

7. Pursuant to N.J.S.A. 58:10B-3, a remediation funding source is to be established in an amount equal to or greater than the cost estimate of the implementation of the remediation and shall be in effect for a term not less than the actual time necessary to perform the remediation at the site. N.J.S.A. 58:10B-3 allows for a change of the amount in the remediation funding source as the cost estimate changes. In the November 23, 1999 RAW addendum Hexcel submitted a revised cost estimate of $4,700,000. Therefore, Hexcel shall increase the remediation funding source to the amount of this new estimate.

If you have any questions, please contact the Case Manager, Joseph J. Nowak, at (609) 292-0130.

Sincerely,

Michael A. Justiniano, Supervisor
Bureau of Environmental Evaluation,
Cleanup and Responsibility Assessment

c: Kris Geller, BEERA
Beverly Phillips, BGWPA
A. William Nosil, Hexcel Corporation
Bergen County Department of Health Services
Gary Paparozzi, Mayor, Borough of Lodi
Stephen Lo Iacono, Jr., Lodi Municipal Manager
Joseph Savarese, Haley & Aldrich
Norman W. Spindel, Lowenstein Sandler PC

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HALEY & ALDRICH

Letter of Transmittal

Date: 23 November 1999
File Number: 74167-017
From: Sunila Gupta SG
Joseph Savarese

To: New Jersey Department of Environmental Protection
BEECRA, P.O. Box 432
401 East State Street, Trenton, NJ 08625

Attention: Mr. Joseph Nowak

Copy to: A. William Nosil (w/o Lab QA/QC and Electronic Deliverables)
Edward Hogan, Esq. (w/o Lab QA/QC and Electronic Deliverables)

Subject: Hexcel Facility, Lodi, NJ

Copies	Date	Description
3	Nov-99	Remedial Action Workplan Addendum
1 of each	Various	Laboratory QA/QC Packages (STL Job #s: F921, G004, G836,Q666, and S619
1	Nov-99	Diskette With Electronic Deliverables
1	Nov-99	Electronic Data Submittal Application (EDSA) Check

Remarks:

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REMEDIAL ACTION WORKPLAN ADDENDUM
HEXCEL FACILITY, LODI, NEW JERSEY

by

Haley & Aldrich, Inc.
Dover, New Jersey

for

Hexcel Corporation

File No. 74167-017
November 1999

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1.0 EXECUTIVE SUMMARY

This Remedial Action Workplan Addendum (RAWA) is provided for the Hexcel Facility (the site) located at 205 Main Street, Borough of Lodi, Bergen County, New Jersey, which is the subject of an investigation under the Industrial Site Recovery Act (ISRA). Based on the results of the soil and groundwater investigation activities undertaken over the past ten years, results from various pilot tests conducted at the site, and the evaluation of the available remedial technologies, a conceptual remediation plan was developed for the site and presented to the New Jersey Department of Environmental Protection in May 1999. This RAWA summarizes the results from soil and groundwater investigation activities and is submitted to present the details of the remediation plan for the site.

The soil and groundwater contamination at the site is primarily associated with the presence of Dense and Light Non-Aqueous Phase Liquids (DNAPLs and LNAPLS). The contaminants of concern are mainly Volatile Organic Compounds (VOCs) and Polychlorinated Biphenyls (PCBs). Due to the nature of the contamination and the success of a pilot test, 2-Phase Extraction Technology was selected as the most viable remedial technology for the site because it is capable of remediating both soil and groundwater media simultaneously. In addition, removal and disposal of shallow soils contaminated with PCBs is proposed to eliminate surface exposure to PCBs. The RAWA provides details on the 2-Phase Extraction technology, provides preliminary design for the site-specific application of the technology, presents the remediation plans for PCBs, and summarizes other minor Areas of Concern (AOCs) at the property.

The remediation plan for the site has been developed to accomplish the site-specific remediation goals, namely, i) removal of free product (DNAPL and LNAPL) in the shallow overburden formation, ii) no adverse effect on Saddle River, iii) no increasing trends of contaminants in the lower overburden formation, iv) elimination of surface exposure to PCBs, and v) elimination of mobile PCBs. The success of the 2-Phase Extraction technology and other remediation activities will be evaluated against these performance objectives.

In addition to the primary AOC related to the presence of DNAPL and LNAPL source areas, we have presented several other outstanding issues as additional AOCs in this RAWA. Additional investigation/remediation activities have been proposed to resolve these outstanding issues. These additional investigation/remediation activities have been represented as AOCs in this RAWA in order to provide a complete overview of the plan for the site.

2.0 INTRODUCTION

This Remedial Action Workplan Addendum (RAWA) is provided for the Hexcel Facility ("the site") located at 205 Main Street, Borough of Lodi, Bergen County, New Jersey, which is the subject of an investigation under the Industrial Site Recovery Act (ISRA). Figure 1 and Figure 2 are the Site Location Map and the Site Plan, respectively. The RAWA supplements the various submissions to the New Jersey Department of Environmental Protection (NJDEP) which are discussed later.

The site is located in a historically industrial area with the presence of manufacturing facilities dating back to the 1800s. The site was part of the historic United Piece Dye Works and has been operated as a chemical manufacturing facility since the early 1900s under various ownerships. Most recently, the site was operated by Fine Organics Corporation (Fine Organics) which ceased operations in September 1998. This RAWA is provided on behalf of Hexcel Corporation (Hexcel), the current owner of the property. Demolition activities were conducted following cessation of operations by Fine Organics. All the buildings at the site except for a warehouse, were demolished in early 1999.

The soil and groundwater investigations to date have indicated contamination related to the presence of chlorinated solvents and Polychlorinated Biphenyls (PCBs). Non-Aqueous Phase Liquids (NAPLs) have been detected and recovered from a number of wells on the site. Although both Dense (DNAPLs) and Light (LNAPLs) non-aqueous phase liquids are present, presence of DNAPLs has been more persistent and widespread than LNAPL. Similarly, although dissolved concentrations of LNAPL-related compounds (benzene, toluene, xylenes) have been detected in groundwater and in soil, the majority of the contamination is related to the presence of chlorinated solvents. PCBs appear to be associated primarily with the DNAPLs with the exception of an area of surficial contamination. Due to the complexity of the nature of DNAPLs, potential of PCB migration with DNAPLs, and the majority of soil and groundwater contamination relating to the DNAPLs, the focus of the remediation strategy will be the remediation of DNAPLs. The remediation strategy, which will focus on LNAPL and DNAPL source removal, will address and treat soil and groundwater contamination areas as well.

The investigations at the site were initiated in response to the requirements of the Environmental Cleanup Responsibility Act (ECRA; now referred to as ISRA), which became applicable on 31 December 1985 when Hexcel Corporation (Hexcel) entered into a Purchase Agreement to transfer ownership of its facility located in Lodi, New Jersey to Fine Organics. In accordance with the ECRA requirements, a *General Information Submission (GIS)* and a *Site Evaluation Submission (SES)* dated 7 January 1986 were submitted to the New Jersey Department of Environmental Protection (NJDEP). Initial soil investigations, pre-dating the trigger of ECRA at the site, occurred in June 1984 to identify the extent of contamination from two leaking underground storage tanks. Further soil investigations were performed in June and August 1985 to identify potential areas of environmental concern and an ECRA sampling plan was submitted in April 1986 to address these areas. The NJDEP approved the plan in December 1987 and the investigation plan was implemented in 1988.

The results of the NJDEP-approved sampling plan were submitted in two parts. A report titled *"Presentation of ECRA Sampling Results for Hexcel Corporation"* was submitted in December 1988. Following submission of the report, additional sampling was conducted during December 1988 and January 1989. The results for additional investigations were submitted in March 1989 in a report titled *"Remediation Plan for the Former Hexcel Industrial Chemicals Group, Lodi Facility"*. The NJDEP granted conditional cleanup plan approval in July of 1990.

During the Spring of 1991, a Groundwater Recovery and Treatment System was installed, as proposed in the March 1989 Remediation Plan. The system was operated on a batch

treatment basis during the period of testing of the system and procurement of various permits including the Sewer Use Permit for the Passaic Valley Sewerage Commissioners (PVSC).

Hexcel submitted a report titled *"Summary of Soil Investigation and Conceptual Cleanup Plan Proposal"* to NJDEP in January 1993 presenting alternatives for cleanup of contaminated soil on the site. Although the above-mentioned report did not discuss groundwater contamination, the expected groundwater remediation plan for the site was the operation of the groundwater recovery and treatment system at full capacity upon approval of the necessary permits.

The submission of the soil cleanup plan was followed by a period of financial instability for Hexcel. At the time when Hexcel was recovering from its financial problems, there appeared to be an opportunity for remediation of the site within the regional framework in conjunction with the proposed plans for redevelopment of the general area by the Borough of Lodi. Additionally, Hexcel was pursuing to purchase the property back from Fine Organics, which would render the site accessible for an aggressive remediation approach.

During the 1990s, Hexcel continued to implement interim remedial measures including free product recovery, and collection and treatment of groundwater entering the basement. Additional tasks, including pilot test for the groundwater recovery system and investigation of barrier wall option as a remediation strategy, were conducted during this period. A pilot test was performed in the Fall of 1996 to evaluate the groundwater recovery system. Data collected from the recovery system pilot test indicated that the current recovery well configuration and equipment would be unable to obtain hydraulic control of the groundwater. Furthermore, the limitations of the recovery system and low well yields would make it ineffective to add more recovery wells to the current system. The details of the pilot test for the existing recovery system at Hexcel was provided in a February 1997 Report *"Modifications to the Ground Water Remediation Plan (March 1, 1989) for the Former Hexcel Facility, Lodi, New Jersey"*. Hexcel also submitted reports titled *"Summary of Historical Soil Data"* and *"Summary of Historical Groundwater Data"* to the NJDEP in July 1997.

In 1998, it became evident that although the focus of remediation at the site would be to render the site ready for the future use of the property, the regional remediation and the related development concept and approach were not in the near term viable. Therefore, with the anticipated departure of Fine Organics from the property in Fall 1998, Hexcel undertook a comprehensive evaluation of all remedial technologies including all conventional and innovative approaches. All options were evaluated for their effectiveness in remediating the specific media and limitations of application. Based on the comprehensive review, 2-Phase Extraction was selected as the most viable remedial technology for the site-specific conditions. 2-Phase Extraction technology is one of the few remedial technologies which are capable of remediating both the soil and groundwater media simultaneously. A pilot test performed in Fall 1998 demonstrated the effectiveness of the 2-Phase Extraction Technology.

Hexcel undertook demolition activities in Winter 1998 subsequent to Fine Organics vacating the property. All the buildings at the site, except for a warehouse, were demolished rendering the site accessible for remediation. The demolition activities were completed in Spring 1999.

Hexcel met with the NJDEP on 20 May 1999 to present the conceptual remediation plan for the site. This Remediation Action Workplan Addendum (RAWA) is submitted to present the details of the remediation plan discussed at the meeting. The RAWA will discuss the physical and hydrogeological setting of the site, summarize the current soil and groundwater conditions, and provide the support for the remedial action selection. The RAWA will provide details on the 2-Phase Extraction technology and provide preliminary design for the site-specific application of the technology. Technology capabilities and limitations will be discussed in addition to the technology performance monitoring criteria and site-specific

cleanup objectives. The RAWA will provide an estimated schedule of remedial activities and associated costs.

3.0 PHYSICAL SETTING

The site is approximately a 2-acre parcel located at 205 Main Street in Lodi, Bergen County, New Jersey (refer to Figure 1 for Site Location Map). The Hexcel site is located in a historically industrial area with the presence of manufacturing facilities dating back to the 1800s. The site was part of the historic United Piece Dye Works (UPDW) and has been operated as a chemical manufacturing facility since the early 1900s under various ownerships. Most recently, the site was operated by Fine Organics Corporation which ceased operations in September 1998.

The site is bounded by Main Street to its east, Saddle River to its west, Molnar Road to its south, and the Route 46 ramp to its north. There are some retail businesses and residences across Main Street. Napp Technologies, Inc. (Napp), the site of a fatal explosion and fire in 1995, is situated across Molnar Road. Currently, the Napp site is the subject of an environmental investigation being conducted pursuant to ISRA.

Hexcel undertook demolition activities in late 1998, which were completed in Spring 1999. All the buildings at the site have been razed, with floor slabs left in place. The only remaining building is the warehouse, which has been left intact to house some of the remediation system components. With the cessation of an operating facility and the demolition of the buildings, the site has been rendered accessible for remediation (Figure 3: Post-Demolition Photos).

The site is located adjacent to the east bank of the Saddle River. At present, the NJDEP has designated the Saddle River as an FW-2 stream, which is a general surface water classification for the waters of the State of New Jersey. This classification denotes that it is not used presently for potable water.

4.0 HYDROGEOLOGICAL SETTING

The site is mapped in the Passaic Formation. The geology above the bedrock is characterized by the fluvial deposits of the Saddle River and man-emplaced fill materials. The subsurface at the site consists of a shallow (or upper overburden) formation, a deep (or lower overburden) formation and a confining layer which separates these two formations. The simplified figure (Figure 4) below illustrates the general geological cross-section at the site:

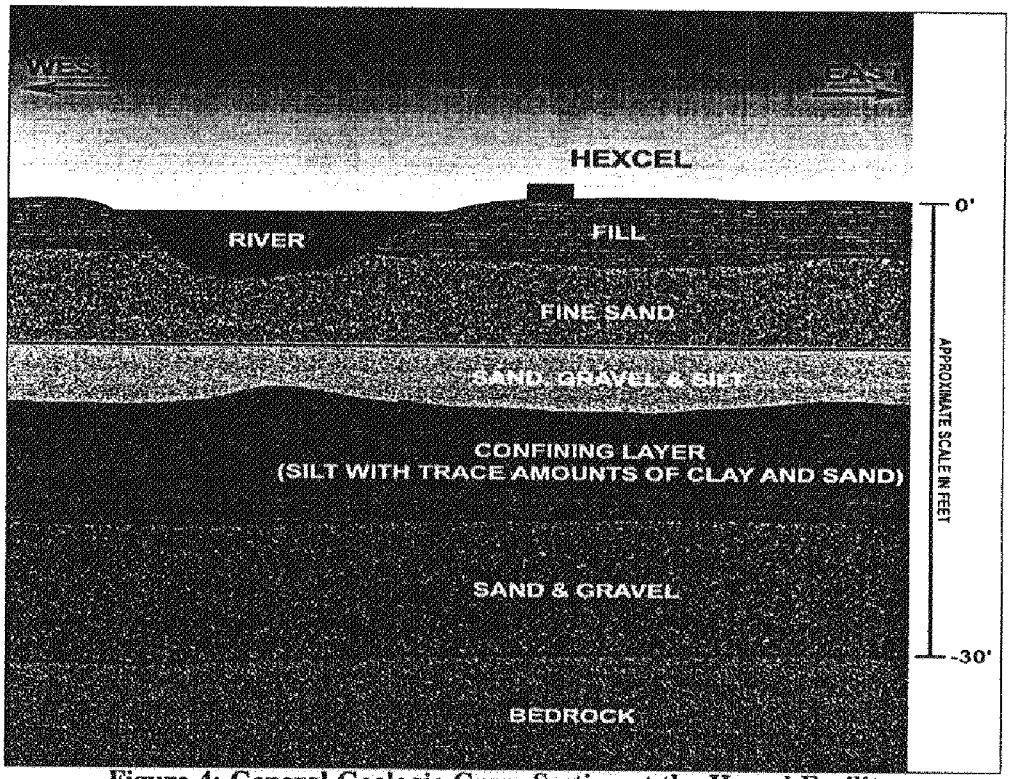

Figure 4: General Geologic Cross-Section at the Hexcel Facility

The subsurface information has been developed from installation of wells and borings at the site. The description and hydrological characteristics of each of the layers is provided in the following sub-sections. Appendix A provides the report[1] for the hydrological testing of the soil samples.

Shallow Formation: The evaluation of the boring logs indicates that the upper subsurface formation consists mainly of fill and fluvial deposits. The uppermost layer of the subsurface is fill consisting of sand, gravel, small boulders, organic matter and cinders. The fill ranges in thickness from 4 feet to 10 feet over the site. Underlying the fill is a formation characteristic of natural fluvial deposits. The fluvial deposits at the site have two distinct layers. The top layer, immediately under the fill, consists of a fine sand. The tested average unit weight of this uniform sand is 100 pcf and the average porosity is 0.46. The tested permeability of this layer is 10^{-3} cm/sec. The layer underlying the fine sand consists of gravel, sand and silt. The amount of silt, sand and gravel in this bottom layer of fluvial deposits varies over the site. Due to the presence of a wide range of particles in this layer, the average porosity of this layer, at 0.32, is lower than the fine sand layer above it. Consequently, the permeability of this layer is also expected to be lower than that of the fine sand layer. The tested average unit weight of the bottom layer of the fluvial deposits is 126 pcf.

The depth to the water table (groundwater in the shallow formation) is typically 3 to 7 feet from the ground surface. Due to the shallow depth of the water table, the groundwater saturates the fluvial deposits and portions of the fill across the entire site. Based on the

[1] The values for hydrological parameters, including unit weight, grain-size analyses, porosity, and permeability, are based on laboratory tests performed by Geotechnical Laboratory of Woodward-Clyde for soil sample cores collected and tested in December 1995.

current subsurface information, the Saddle River channel appears to be in hydraulic connection with the fluvial deposits.

In the shallow formation, the general direction of the groundwater flow is from the east to the west toward the Saddle River. The groundwater elevation contours for water levels collected in July 1999 are provided in Figure 5. The contours indicate the presence of a groundwater mound in the vicinity of the former Building 2. This mound indicates a locally altered groundwater flow direction, as indicated in Figure 5. While the facility was in operation, the possibility of leaking water pipes was believed to be the cause for the mound. It is possible that a concrete structure, which is known to exist under the former Building 2, is the cause for the mound since the mound has not dissipated following water utility shut-off to the site.

Confining Layer: Underlying the fill and fluvial deposits is a layer of fine-grained sediments which form the confining layer. Grain-size analyses of this layer indicates that these sediments are mainly silt with trace amounts of sand and clay. The unit weight of this layer is 132 pcf and porosity is 0.34. The tested average permeability of this material is 4.5×10^{-6} cm/sec. This permeability value is consistent with the published range of permeability for silt and indicates that this formation restricts groundwater flow. The depth to the confining layer from ground surface has been found to range from 7 feet to 16 feet over the site and the thickness of the layer varies from 4 feet to 15 feet. The confining layer is known to exist from the western property boundary (along the Saddle River) and extends eastward towards Main Street. The subsurface investigations indicate that the confining layer is thinner and more silty in the vicinity of the Main Street, compared to the other areas of the site.

Deep Formation: Sediments of the deep formation beneath the confining layer are composed of sand and gravel deposited by glacial processes. This deposit is characteristic of glacial outwash deposits in which coarse sediments are laid down by debris-laden streams formed from meltwater of glaciers. This formation appears to extend down to the bedrock. The range of depth to the bedrock at the site is 25 to 30 feet from the ground surface. Although analyses have not been conducted to evaluate the hydrological parameters of the deep formation, the porosity and permeability of the formation are expected to be higher than that of the shallow formation based on the soil composition. In the deep formation, the potential direction of groundwater flow is from the northeast to the southwest. Figure 6 provides the groundwater contours generated for the water level data collected in July 1999 for the eight deep wells on site.

5.0 SUMMARY OF INVESTIGATIONS

The investigation activities at the site have been going on since 1984 to evaluate the soil and groundwater conditions at the site and for the purposes of developing remedial strategy for the site. This section briefly summarizes the soil and groundwater investigation activities conducted to date; the details on the investigations were provided in the previous submissions to the NJDEP.

5.1 Soil Investigations

Soil conditions at the site have been extensively investigated with samples collected between June 1984 and August 1999. Initial soil investigations occurred in June 1984 to identify the extent of contamination from two underground storage tanks (USTs). Subsequent soil sampling was performed at the site to identify areas of environmental concern and the extent of soil contamination. Soil sampling conducted at the site consists of soil samples from 138 borings, post-excavation samples for USTs, and surface samples for PCB delineation. Of the 138 borings, 110 borings and the UST excavations were conducted between 1984 and 1992; detailed results from these investigations were provided in earlier submissions to the NJDEP and most recently summarized in the "*Summary of Historical Soil Data*" report submitted to the NJDEP in July 1997. Since then, 30 borings were installed in October 1998 to obtain further information on PCBs for remedial planning purposes. Additionally, soil samples were

collected from 7 hand-auger borings and 16 Geoprobe borings in June and August 1999 to delineate an area with elevated levels of PCBs on the surface. Table 1 lists all the soil samples, including depths and tested parameters, collected at the site for evaluation of soil conditions.

5.2 Groundwater Investigations

Groundwater investigations at the site have included testing of wells for groundwater quality and monitoring for free product presence in the wells. Hexcel has been performing an approved groundwater elevation/product monitoring program on a weekly, monthly, and quarterly basis as part of the interim remedial measure for the site. Apart from monitoring of wells for free product (LNAPL and DNAPL) on a regular schedule, Hexcel has conducted groundwater sampling for chemical analyses to evaluate the dissolved concentrations in groundwater. The most recent round of groundwater sampling at the site was conducted in August 1998. The details on the three different series of wells (monitor, recovery, and control wells) installed at the site were provided in the July 1997 "*Summary of Historical Groundwater Data*". Table II summarizes the groundwater sampling conducted at the site.

6.0 INVESTIGATION RESULTS

The results from both soil and groundwater investigations are discussed together and categorized based on specific parameter, to develop the Areas of Concern (AOCs) for the site. Most of these results have been provided to the NJDEP in previous submissions, and were recently summarized in the above-referenced July 1997 reports on soil and groundwater data. This RAWA summarizes the historical data including the more recent data from soil sampling conducted for PCBs in 1998 and 1999 and the groundwater sampling data from 1998. The results are categorized for the parameters of concern, namely, i) Volatile Organic Compounds (VOCs); ii) Base/Neutral and Acid Extractable Compounds (BNAs); iii) Polychlorinated Biphenyls (PCBs); and iv) Priority Pollutant Metals (PPMs). Section 6.5 provides a technical overview of the soil and groundwater data .

6.1 Volatile Organic Compounds (VOCs)

A review of the volatile organic testing conducted at the site indicates the presence of contamination in the soil and groundwater associated primarily with the presence of DNAPL (chlorinated solvents) source areas, and LNAPL (fuel oil and gasoline) source areas to a lesser degree. The presence of volatile organic compounds in the soil is limited to the areas of former underground and aboveground storage tanks, as shown in Figure 7. For boring locations where samples have been taken at various depths, the general trend is an increase in concentration with increase in depth from the ground surface within the shallow formation, as would be expected from a DNAPL-related contamination. Table III provides the results for soil samples exceeding the Impact to Ground Water Soil Cleanup Criteria (IGWSCC), the most stringent cleanup criteria for volatile organic parameters. Figure 7 provides the soil sample locations tested for VOCs; samples were collected at more than one depth at most locations.

The groundwater monitoring results show that the dissolved concentrations of VOCs have been delineated for the purposes of the implementation of the remedial action at the site. Table IV provides the results for volatile organic testing over time for the shallow wells and Table V provides the results for the deep wells. Figure 2, Site Plan shows the monitor well locations.

Due to the nature of DNAPL contamination, 2-Phase Extraction was selected as the most viable remedial technology for the site because of its capability in treating NAPLs, contaminated soil, and groundwater in an area. The areas identified as soil contamination areas (Figure 7) will be treated using the 2-Phase Extraction process, together with the other DNAPL-source areas identified at the site from groundwater/product monitoring. Section 10

provides details on the 2-Phase Extraction technology and its site-specific application for Hexcel.

6.2 Polychlorinated Biphenyls (PCBs)

PCBs at the site are associated both with LNAPL and DNAPL and have been detected in soil and groundwater samples collected at the site. The PCBs in the soil have been delineated. A comprehensive investigation was undertaken in 1998 and 1999 to delineate i) the PCBs in soils associated with the presence of DNAPLs, and ii) PCBs on the surface in an area close to the former Boiler Room. The soil sampling results were reviewed in conjunction with the current PCB remediation policy (40 CFR 761.61) which allows for levels up to 100 ppm to be left on-site with the appropriate engineering and institutional controls. As of 1 November 1998, the Site Remediation Program is accepting 100 ppm as the soil removal criteria for PCBs (*Site Remediation News, December 1998, Vol. 10 No 2-Article 03*).

Table VI provides the results for all soil samples tested for PCBs at the site and Figure 8 provides the PCB sampling locations; samples were collected at more than one depth at most locations. Aroclor 1242 and Aroclor 1248 have been detected in exceedance of the 100 ppm PCB level in the soil samples. The Aroclor detected in the surface samples is primarily 1248 whereas the Aroclor detected in the deep samples is primarily 1242. Other Aroclors (1232, 1254, and 1260) have been detected at low levels in isolated soil samples. As indicated in Figure 8, the extent of surficial PCBs is limited and the soils from the impacted area are proposed to be excavated, as detailed in Section 7.6. PCBs exceeding the 100 ppm level in deep soil samples are also limited to a few isolated locations. Section 7.6 also outlines the proposed remedial strategy for the deep sub-surface PCBs, primarily associated with DNAPLs.

Relatively low concentrations of PCBs have been detected in the groundwater samples compared to the levels detected in the soils. This indicates the tendency of PCBs to adsorb strongly to soil, limiting their mobility and potential for groundwater contamination. The high affinity of the PCBs to the soil particles was examined by analyzing both filtered and unfiltered groundwater samples for PCBs in 1993. Out of the seven wells for which both types of samples were collected, PCBs were detected in the unfiltered samples from five wells in the range of 1.9 µg/L to 470 µg/L (Table VII). On the other hand, PCBs were not detected in the filtered samples from the six out of the seven wells tested.

For the most recent groundwater sampling round in 1998, PCBs were detected in unfiltered samples from the shallow wells in the range of non-detect to 150 µg/L; filtered samples were not collected. PCBs were also detected in two deep wells, MW-9 (1.5 µg/L) and MW-3 (0.35 µg/L), for the 1998 groundwater testing round; samples from all the other deep wells were non-detect for PCBs. Table VII and Table VIII provide PCB results for groundwater samples from shallow and deep wells, respectively.

6.3 Base/Neutral and Acid Extractable Organics (BNAs)

Although BNAs do not appear to be of significant concern at the site based on the review of the soil and groundwater data, a proposal for additional groundwater sampling for BNAs was provided in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter; the proposal is outlined in Section 7.3. Of all the soil samples tested, only four exceeded the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) at concentrations only marginally higher than the cleanup criteria (Table IX); the RDCSCC is the most stringent cleanup criteria for the BNA compounds. Additionally, of all the wells tested for BNAs, significant BNAs were detected only in well CW-3 and a few exceedances were detected in CW-11 and CW-12. The proposal for additional groundwater testing for BNAs, as stated above, includes sampling of CW-3, CW-11, and CW-12. Figure 9 provides the soil sample locations. Table X provides the exceedances for BNAs detected in the groundwater samples.

6.4 Priority Pollutant Metals (PPMs)

Although metals do not appear to be of significant concern at the site based on the review of the soil and groundwater data, a proposal for additional groundwater sampling for PPMs was provided in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter; the proposal is outlined in Section 7.3. Of all the soil samples tested for metals, only four samples exceeded the RDCSCC, which is the most stringent cleanup criteria for metals (Table XI). Figure 10 provides the sample locations. Table XI and Table XII provide the exceedances for metals detected in soil and groundwater samples.

6.5 Technical Overview

The laboratory data presented with this report is reliable. A technical overview of the laboratory data was conducted in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E). Specifically, the conformance/non-conformance summaries provided by the laboratory were reviewed. Extraction and Analysis Dates reported by the laboratory were reviewed and determined to be in compliance with the required holding times. NJDEP-certified laboratory, STL Envirotech (Certification # 12543) was used for analytical services.

The laboratory QA/QC packages for soil PCB analyses conducted in 1998 and 1999 are provided as separate volumes. Laboratory QA/QC packages for the soil and groundwater data collected prior to 1998 were submitted to the NJDEP with previous submissions. Additionally, laboratory QA/QC package and electronic deliverables for the groundwater data collected in July 1998 were submitted to the NJDEP with our October 1998 progress report. The electronic deliverables for the 1998 and 1999 PCB data are provided in the enclosed diskette. A printout indicating that the data passed the Electronic Data Submittal Application (EDSA) evaluation is provided with the cover letter.

7.0 AREAS OF CONCERN (AOCS)

As discussed earlier, the soil and groundwater contamination at the Hexcel facility is related to the presence of DNAPL and LNAPL source areas. Due to the complex nature of contamination associated with the presence of DNAPLs, the selection of remedial strategy for the site was focused towards a technology that would be capable of remediating both soil and groundwater. Therefore, the primary Areas of Concern (AOCs) at the site are the DNAPL and LNAPL source areas which continue to impact the soil and groundwater quality at the site. We have also identified additional AOCs, as listed below, based on our proposals for additional investigation activities presented to the NJDEP in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter. Therefore, based on our evaluation of the soil and groundwater results and a review of the proposals for further investigation presented in our 3 March 1999 letter, the AOCs for the Hexcel site can be summarized as follows:

AOC 1: DNAPL and LNAPL Source Areas/ Exceedances of Volatile Organic Compounds (VOCs) in Soil and Groundwater
AOC:2: Delineation of Groundwater Contamination to the South (across Molnar Road)
AOC:3: Base/Neutral and Acid Extractable Organics (BNAs) and Priority Pollutant Metals (PPMs)
AOC 4: Extent of Silt Layer in the Area of Former Building 2 and Investigation for Presence of DNAPL
AOC 5: Groundwater Quality in the Deep (Lower Overburden) Formation
AOC 6: Remediation of PCBs
AOC 7: Bedrock Groundwater Investigation
AOC 8: Saddle River as a Receptor
AOC 9: Storm Sewer Outfall
AOC 10: Industrial Sewer Line
AOC 11: Hexcel Production Well

7.1 AOC 1: DNAPL and LNAPL Areas/ Volatile Organic Compounds (VOCs) in Soil and Groundwater

Based on the soil and groundwater testing conducted at the site and the continued product monitoring efforts, areas proposed to be targeted for remediation have been identified ("source areas"). The source areas include i.) areas of DNAPL and LNAPL presence as observed from product monitoring efforts, and ii) areas of soil contamination, as depicted in Figure 7. The identification of the source areas was important in the development of a remedial strategy for the site. Each of these source areas, which will be targeted for the implementation of the remedial action at the site, is shown in Figure 11 (below and also attached) and summarized in the following sub-sections. Although some of the source areas are adjoining each other, they have been divided into separate areas for the proposed 2-Phase application. Based on the final design of the 2-Phase Extraction system, it is possible that some of these areas might be merged, if appropriate.

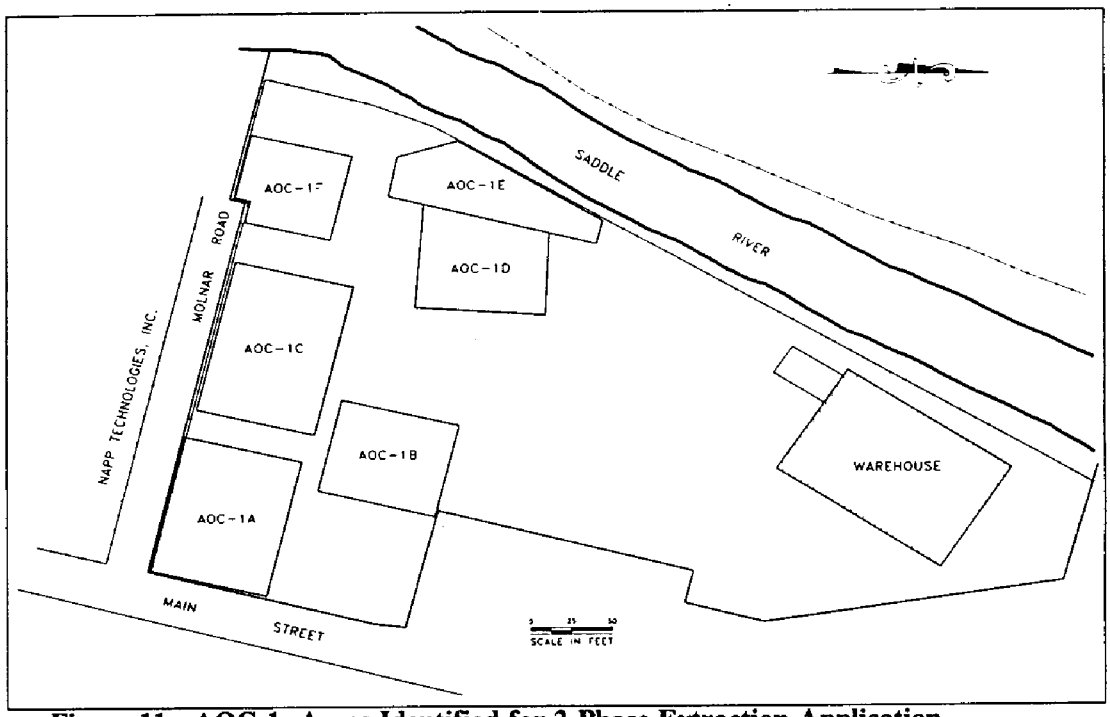

Figure 11: AOC-1, Areas Identified for 2-Phase Extraction Application

AOC -1A: Area close to the intersection of Main Street and Molnar Road where high methylene chloride concentrations have been detected in groundwater. The pilot test for the 2-Phase Extraction technology was conducted at AOC-1A.

AOC -1B: Area to the east of former Building 2 where exceedances for VOCs have been detected in soil and groundwater. Although no free product (LNAPL or DNAPL) has been detected in the monitoring wells MW-4 and MW-27 in AOC-1B, these wells have typically had very high concentrations of VOCs (> 100 ppm) detected in groundwater.

AOC-1C: Area of the basement pit and the adjoining areas of soil contamination. The basement pit has been long recognized as an area of concern due to the presence of DNAPL beneath the floor slab. One of the well points in the basement was utilized for DNAPL recovery until recently when the basement was secured with steel plates as part of demolition activities.

AOC-1D: Area to the west of former Building 2 where free product has been observed and recovered from monitoring and recovery wells. Specifically, monitoring well MW-6 in this area is the only well on-site that has indicated presence of DNAPL consistently over the past few years. Additionally, former aboveground storage tanks were also located in this area and soils testing has indicated elevated levels of VOCs.

AOC-1E: Area close to the Saddle River property boundary. Product monitoring at the site has indicated presence of DNAPL is some of the wells along the Saddle River property boundary. This source area is important because protection of the Saddle River is one of the remediation goals for the site (Section 12).

AOC-1F: LNAPL source area in the vicinity of well CW-7. Although no LNAPL has been detected in CW-7 for almost a year, substantial amounts of LNAPL have been recovered from this well historically. The remediation of this source area will enhance the groundwater quality in the downgradient well MW-10, which is located at the Saddle River property boundary.

The AOCs summarized above will be targeted for the implementation of the 2-Phase Extraction technology. Based on the results of the proposed investigation in the former Building 2, as outlined in Section 7.4 and previously submitted in our 3 March 1999 letter to you, this additional area will be targeted for remedial action, if necessary. Section 10 provides details on the proposed remedial action for AOC-1.

7.2 AOC-2: Delineation of Groundwater Contamination to the South (across Molar Road)

The evaluation of groundwater testing conducted in July 1998 indicates that additional testing to the south is not necessary to achieve delineation at this time, as we previously stated in our 3 March 1999 letter. Monitoring wells MW-22, MW-23, and MW-24, which are located along Molnar Road, were included in the July 1998 sampling for VOCs and PCBs. Hexcel was denied access by Napp to sample MW-25 (Hexcel well) and MW-E8 (Napp well) on their property.

Groundwater results indicate a significant improvement in concentrations detected in monitoring wells MW-22, MW-23, and MW-24. Specifically, total targeted VO concentrations in MW-22 decreased to about 1 part per million (ppm) in 1998 from 405 ppm in 1993. Similarly, total VOCs in MW-23 were detected at less than 0.1 ppm compared to 24 ppm in 1995. Additionally, the only compound detected in MW-24 was chlorobenzene at concentrations below the Ground Water Quality Standards. Although MW-E8 could not be sampled in July 1998, groundwater testing results from January 1997 indicate a total VO concentration of about 0.02 ppm. The historical groundwater testing data for shallow wells is provided in Table IV. Based on the testing results, Hexcel believes that groundwater contamination to the south along Molnar Road has been adequately delineated with regard to the contaminants at Hexcel.

7.3 AOC 3: Base/Neutral and Acid Extractable Organics and Priority Pollutant Metals

Hexcel proposes to perform groundwater sampling for metals as well as BNA testing, as outlined here and previously submitted in our 3 March 1999 letter. Hexcel proposes to perform groundwater sampling for all the shallow monitoring wells adjacent to the Saddle River (MW-8, MW-10, MW-14, and MW-28) and two control wells (CW-11 and CW-12) to evaluate the potential impact of BNAs and PPMs to the groundwater, as proposed in our 3 March 1999 letter. Additionally, control well CW-3 will be tested for BNAs since this was the only well that had indicated presence of significant BNAs when it was previously tested (in 1990). The results of the groundwater samples will be compared with GWQS to evaluate the need for further groundwater sampling for BNA and PPM parameters.

To evaluate the impact of turbidity on metals concentration, the samples will be collected using the low-flow purge method to reduce the effect of turbidity on metals concentrations. Additionally both filtered and unfiltered samples will be collected for metals analysis for a technical evaluation of the relationship between turbidity and metals concentrations, if any, at the site. Although NJDEP requires that results from only unfiltered samples be compared to the applicable standards, the filtered samples will be collected to evaluate the potential for the mobility of the metals. This additional groundwater sampling, as outlined above, will be performed upon the NJDEP's approval of the proposal.

7.4 AOC 4: Extent of Silt Layer in the Area of Former Building 2 and Investigation for Presence of DNAPL

Hexcel proposes to install a boring in the former Building 2 area to define the extent of the confining layer and investigate the presence of DNAPL in this area, as previously proposed in our 3 March 1999 letter to you. If the confining layer exists, the boring will be terminated at the top of the confining layer. Continuous sampling will be performed for visual inspection and field screening. The boring will be completed as a shallow monitoring well only if DNAPL is observed in the soil split spoon samples. If the confining layer is absent in this area, this would imply that the construction fill for the subsurface structure extends through the confining layer. If this is the case, the boring location will then be completed as a "deep" monitoring well in this case. The monitoring well will be completed with the top of the screen set at about 3 feet NGVD elevation, which is comparable to the top of the screen elevation for the nearest deep monitoring well MW-7. Hexcel will perform the activities following NJDEP's approval of this proposal.

7.5 AOC 5: Groundwater Quality in the Deep (Lower Overburden) Formation

Hexcel proposes to continue monitoring the wells screened in the lower overburden formation within the groundwater monitoring program for the site. Although dissolved concentrations of VOCs have been detected in the monitoring wells at the Hexcel site, these have typically been two to three orders of magnitude lower than the upper overburden formation. Additionally, DNAPL has never been detected or indicated in any of the deep wells. The above indicates that the silt-clay layer is an effective confining unit at the site.

The groundwater quality in the lower formation is expected to improve with the implementation of remedial action to remediate the DNAPL source areas in the shallow formation. Hexcel will continue to monitor the deep wells, while remedial action is implemented at the site, to evaluate the success of the remediation process.

7.6 AOC 6: Remediation of PCBs

As discussed in Section 6.2, based on the comprehensive PCB soil sampling conducted in 1998 and 1999 the PCB contamination at the site can be categorized into two areas; i) the presence of elevated levels of PCBs on the ground surface in the vicinity of the former Boiler room, and ii) PCBs primarily associated with DNAPL at depth, detected in the upper overburden soil samples. Both of these areas are discussed below.

Surficial PCBs: Hexcel proposes to excavate the limited area of elevated PCB levels, as shown in Figure 8, to a depth of 2 feet below ground surface. The surface PCBs have been delineated for the purposes of implementing remedial action. In the westerly direction, the surface soils will be excavated beyond sample HA-43 and HA-44, which had concentrations of PCBs exceeding the 100 ppm level. In the north direction, the excavation will be extended to the edge of the former boiler room. The slab of the former boiler room was left intact during demolition, therefore, the potential for surface exposure to PCBs, if any, is minimized. Post-excavation sample will be collected in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E). Since field screening methods are not available for PCBs, post-excavation samples will be biased towards worst areas based on

visual observations. Following excavation and collection of post-excavation surface samples, the area will be backfilled using clean backfill. Additionally, the area will be capped using an asphalt cover. This area will be included in the implementation of an institutional control at the site in the form of a Deed Notice.

PCBs in deeper soil samples: PCBs have been detected at concentrations exceeding the 100 ppm level in soil samples at depths below 5 feet from the ground surface. These soil sample locations are isolated and will be included in the areas proposed for 2-Phase implementation. Hexcel proposes to re-evaluate the locations exceeding the 100 ppm PCB level following the implementation of the 2-Phase remediation. During the remediation of source areas by implementation of 2-Phase, PCBs may be removed by removal of contaminated groundwater. The recovery of contaminated groundwater can be expected to reduce PCB concentrations in the formation together with the reduction in the VOC concentrations. Therefore, Hexcel proposes to re-evaluate the locations of PCB exceedances including the basement area for PCB concentrations, following implementation of the 2-Phase Extraction remediation process. The residual concentrations of PCBs in soil will be evaluated with respect to the impact on groundwater quality and if necessary, a petition for a risk-based alternate standard will be submitted to the regional USEPA administrator and the NJDEP case manager for consideration.

7.7 AOC 7: Bedrock Groundwater Investigation

The NJDEP has required installation of a bedrock well in the vicinity of MW-1, since this well is screened just above bedrock and contains elevated concentrations of chlorinated compounds. Hexcel acknowledges the NJDEP's requirement for vertical delineation in this area and will install a bedrock well near MW-1.

The schedule for bedrock well installation will be dependent on the schedule for implementation of remediation of the shallow overburden in this area. Hexcel is concerned about opening a pathway for deeper contamination. In spite of taking appropriate measures to avoid cross-contamination of the formations, the risk is a valid concern because of the thinning of the confining layer in this area. Therefore, Hexcel proposes to install the bedrock well for vertical delineation following remediation of the shallow contamination in this area.

7.8 AOC 8: Saddle River as a Receptor

Saddle River is an AOC due to its proximity to the site and the potential for environmental impact to its surface water and sediments from contamination on the Hexcel facility. We propose to evaluate the Saddle River by conducting surface water sampling, and an ecological assessment including evaluation and chemical testing of sediments. Each of these proposals are discussed below.

Surface Water Sampling: The compliance of surface water samples to the Surface Water Quality Criteria (SWQC) is a primary performance criteria of the remediation plan. Although Hexcel proposed collecting surface water samples at five locations in its letter dated 3 March 1999 to the NJDEP, NJDEP advised us in the May 1999 meeting that the proposal could not be approved since the agency imposed similar requirements on Napp. NJDEP has required surface water samples at seven locations based on a sample spacing of approximately one sample every 60 feet as required for Napp. The surface water samples will be analyzed for VOCs and PCBs. The need to include BNA and metals testing for surface water samples will be evaluated based on the results of the groundwater testing proposed in Section 7.3 above. Specifically, surface water samples will be analyzed for BNA and metal parameters only if concentrations exceeding the GWQS are detected in wells tested along the Saddle River. Therefore, surface water sampling will be performed upon NJDEP's approval of the additional groundwater testing proposal presented in Section 7.3 and evaluation of the groundwater testing results.

Ecological Evaluation: Hexcel will conduct an ecological evaluation pursuant to the Technical Requirements for Site Remediation. Pursuant to N.J.A.C. 7:26E-3.11 and 7:26E-4.7, Hexcel proposes to conduct the baseline ecological evaluation together with additional sampling, as proposed below, to evaluate the potential ecological impact of the on-site contamination to the river. Specifically, the ecological evaluation will include an inspection for the entire site for visual observations of stressed vegetation along the riverbank and unpaved portions of the site, and an assessment of the surface water and sediments. Sediment samples will be collected to examine the presence of benthic invertebrates. Visual observations of contamination, if any, in the sediments will also be noted. In addition, sediment samples will also collected for chemical analyses. The parameters for chemical analyses will be determined based on the results of the groundwater sampling. Sediment samples will be collected from an upstream location, potentially worst area (opposite well MW-8) adjacent to the riverbank, and a downstream location, for a qualitative comparison on abundance of the benthic organisms. The results of the ecological assessment activities, including results of chemical testing of sediments and surface water, will be provided to the NJDEP with our recommendations.

7.9 AOC 9: Storm Sewer Outfall

Hexcel requests that no further action be required for the sediments associated with the storm sewer outfall. Hexcel believes that the request is appropriate due to the following reasons:

- The sediment sampling results have shown presence of PCBs all along the Saddle River. The evaluation of the results of sediment sampling conducted by Hexcel and others were presented in our progress report dated 28 January 1998. The results are summarized in Table XIII and the locations of the sediment samples are provided in Figure 12.

- The storm sewer conveys runoff from a large area of Industrial Lodi. The contribution of other sources, including users of the storm sewer prior to its entrance onto the Hexcel and Napp properties and redistribution of sediments due to flooding events, is a significant factor.

- Saddle River is prone to significant flooding and more than seven major flood events have been recorded in the past thirty year with the most recent floods associated with Hurricane Floyd in September 1999. Significant redistribution of sediments, affecting the localized depositional environments, occurs from these flooding events.

- The U.S. Army Corps of Engineers (Army Corps), as NJDEP is aware, has a plan to widen and deepen the Saddle River channel as a flood protection measure. The Army Corps plan, when implemented, will involve dredging of the river sediments. Based on the Army Corps' report (*Interim Report on Flood Protection Feasibility, Lower Saddle River, Bergen Co., NJ*), Army Corps expects to encounter PCB contamination in sediments along a major portion of the Saddle River.

Therefore, based on the Army Corps plan for the Saddle River channel for the future, Hexcel believes that no further action be required for the sediments associated with the storm sewer outfall. The request for no further action is also appropriate due to the potential of contribution of other sources including users of the storm sewer prior to and after its entrance onto the Hexcel property and redistribution of sediments due to flooding events.

7.10 AOC 10: Industrial Sewer Line

Hexcel proposes to abandon the existing industrial sewer line. The 24-inch reinforced concrete pipe, which runs from the vicinity of the existing warehouse to the Hendrix pump station, has been reported to be filled with sediments with elevated levels of PCBs. Hexcel proposes to hydraulically flush and vacuum the interior of approximately 400 feet of length of

the sewer line, from origin to Molnar Road. The recovered sediments will be tested for waste classification and transported for disposal to an appropriate facility. The sewer line will be jet-grouted using a cement-bentonite mixture. It is important that the sewer line be grouted prior to implementation of 2-Phase in the areas through which it runs, otherwise the open sewer line might act as a vacuum sink reducing the efficiency of 2-Phase Extraction in the area of the sewer line.

7.11 AOC 11: Production Well

Hexcel proposes to abandon the existing production well on the site, which is no longer used since cessation of operations at the facility. The production well is approximately 240 feet deep with 38 feet of casing. Upon NJDEP's approval, Hexcel will sub-contract a NJ licensed well driller to perform well closure activities.

8.0 REMEDIAL ACTION SELECTION

A comprehensive review of all remedial technologies was undertaken in 1998 with the objective to develop a comprehensive remedial plan for the site. We examined approximately 17 types of technologies and over 100 remedial process options. All options were evaluated for their effectiveness in remediating the contaminants in the specific media and for limitations of their applications. Based on the nature of contamination and the hydrogeological characteristics of the site, 2-Phase Extraction was selected as the most viable technology for remediation of contaminated soil and groundwater at the site. 2-Phase Extraction was selected for its versatility in treating both contaminated soil and groundwater (both vadose and saturated zones) simultaneously and its applicability to remediate source areas as well as dissolved concentrations of volatile organics in groundwater. The 2-Phase Extraction process and its site-specific application are discussed in Section 10. Additionally, a Hydrogen Release Compound (HRC™) application was selected as a possible polishing step, if required, to follow the 2-Phase Extraction. The HRC application is capable of enhancing the naturally occurring degradation processes of chlorinated solvents and can be applied to dissolved plumes. As such, HRC application was evaluated and selected as a potential process to enhance natural degradation processes for achieving the site-specific remediation goals (discussed in Section 12), if necessary when 2-Phase indicates an asymptotic recovery of contaminant mass. A brief description of the HRC application is provided in Section 11.

9.0 REGULATORY ACCEPTANCE

In our 20 May 1999 meeting with the NJDEP in which we presented the conceptual remedial plan, NJDEP requested information on previous applications of 2-Phase and HRC at other sites and on endorsements within the regulatory community. The NJDEP also inquired about endorsement from the Interstate Technology Regulatory Cooperative (ITRC). We visited ITRC's webpage on the Internet and contacted Mr. Frank Camera of the NJDEP who was listed as a contact. Mr. Camera advised us that ITRC's list of innovative characterization and remediation technologies is not inclusive of all available technologies. He was not surprised that 2-Phase Extraction and HRC are not part of the ITRC's current list. The sub-sections below discuss some of the applications for these technologies together with their regulatory endorsements.

9.1 2-Phase Extraction

2-Phase Extraction (or Vacuum-Enhanced Recovery) has been applied successfully at many NAPL sites and is listed as a technology that is in transition from being innovative to conventional (*Remediation Engineering: Design Concepts, Suthan S. Suthersan, 1996*). 2-Phase Extraction was one of the seven technologies that were demonstrated at the McClellan Air Force Base (AFB) which has been designated as the Chlorinated Hydrocarbons Remedial Demonstration Site as part of the National Environmental Technology Test Site (NETTS) Program. NETTS is a joint Department of Defense and USEPA program for the evaluation

and testing of environmental remedial technologies. The 2-Phase Extraction technology demonstration at the McClellan AFB site was highly successful. Before conversion to a 2-Phase Extraction system, two wells together had extracted an average of 120 pounds of contamination per year from conventional pump and treat. In the first six months of 2-Phase Extraction from one well, approximately 1600 pounds of contamination was removed from the soil and groundwater. The Technology Fact Sheet states that the 2-Phase Extraction technology extracts VOCs from the soil while simultaneously removing contaminated groundwater and concludes that the use of 2-Phase Extraction accelerated the cleanup of both soil and groundwater contamination at the McClellan AFB. Information on the 2-Phase Extraction demonstration, downloaded from the Internet, is provided as Appendix B.

Haley & Aldrich has extensive experience in successful implementation of the 2-Phase Extraction technology in various states. Haley & Aldrich was instrumental in the development of the 2-Phase Extraction technology patented by Xerox, Inc, which was used at the McClellan AFB site. The Xerox-patented technology was also utilized for soil and groundwater remediation at an industrial facility in Blauvelt, New York. The New York State Department of Environmental Conservation (NYSDEC) has identified 2-Phase Extraction as the selected remedial technology in the Record of Decision for the Blauvelt site. Table XIV provides a summary of 2-Phase Extraction projects implemented by Haley & Aldrich, including information on the geologic setting, contaminants of concern, and the mass-removal performance.

A pilot test was performed at the Hexcel facility using the Xerox technology which indicated the effectiveness of the 2-Phase Extraction technique compared to a conventional pump and treat previously approved for the site in 1990. The pilot test results are discussed in the Section 10.2.

9.2 Hydrogen Release Compound (HRC™)

Hydrogen Release Compound (HRC™) is a fairly new proprietary compound marketed by Regenesis Bioremediation Products, Inc. and is in the commercial application stage for the in-situ enhancement of anaerobic degradation processes. Data from the HRC development stage and early commercial applications were presented in the International Environmental Technology Expo'99, hosted by the NJDEP in April 1999. Haley & Aldrich has conducted one of first field applications of HRC in New Jersey at an industrial facility in Moonachie. The HRC injection was completed in May 1999 and monthly testing of indicator parameters shows that anaerobic conditions are being produced due to HRC injection, which should enhance the degradation of the dissolved chlorinated VOCs present in the groundwater. The site is referred to as Crest-Foam Corp. and the NJDEP case manager on this ISRA case is Mr. Richard Burgos.

10.0 2-PHASE EXTRACTION

2-Phase Extraction is an innovative remedial process patented by Xerox Corporation that combines the attributes of soil vapor extraction and groundwater recovery and has been developed for in-situ remediation of volatile organic compounds in soils and groundwater. The process operates by applying a vacuum (typically high vacuum >25"Hg) below the water table to simultaneously extract groundwater and soil vapor. This process has been successfully implemented on sites throughout the United States, Canada, and Europe, with varying geologic conditions and contaminants, and has been proven to accelerate site remediation process and reduce overall project life cycle costs. This section will provide details on process descriptions, regulatory acceptance of the technology and the results of the 2-Phase pilot test conducted at the Hexcel site.

10.1 Process Description

2-Phase Extraction simultaneously recovers groundwater and soil vapor under high vacuum from a modified conventional recovery well. Groundwater and soil vapors that enter the well under vacuum are removed from the well casing. The 2-Phase Extraction process accelerates groundwater extraction rates, the removal of volatile contaminants present as free product (NAPLs), and enhances partitioning of soil vapors and materials sorbed to the soil. The bulk of the volatile contaminants present in groundwater recovered by 2-Phase are stripped during extraction. The contaminant mass originally in groundwater is transferred to the vapor phase. The contaminant mass recovered can be greater than that would be achieved with conventional pump and treat technology as all contaminant phases can be simultaneously influenced during extraction. An additional benefit as compared to other conventional groundwater remedial technologies is that there is no groundwater extraction pump required within the recovery well, which also eliminates the need for electrical or pneumatic connections. The extraction wells within the contaminant plume are fitted with an extraction tube to access the contamination zone at depth. Extraction wells are conventionally constructed wells, and can be retrofitted from existing monitoring wells in some cases.

The 2-Phase Extraction process achieves enhanced mass removal by accessing all contaminant phases simultaneously. These phases typically consist of dissolved constituents in groundwater, non-aqueous phase liquids (NAPL), soil vapor, and/or materials sorbed to soils above and below the original saturated zone. The contaminant mass that is extracted is stripped from the groundwater and transferred into the vapor phase, where treatment is more cost effective. 2-Phase Extraction relies on the following major mass removal mechanisms for in-situ remediation of soil and groundwater:

i.) Increased airflow in previously saturated and capillary zones
- Application of vacuum allows for capillary pressures to be overcome, forcing the release of retained water and residual product.
- Once the soils are dewatered, the formation is then open to the airflow created by the high vacuum system.
- Application of high vacuums creates a large driving force for airflow in the vadose and the dewatered zones.

ii.) Increased groundwater recovery rates
- Application of high vacuum allows for increased pumping rate by increasing the net hydraulic head differential.

iii.) Increased recoverability of free-phase product
- Enhanced recovery of residual product trapped due to the heterogeneity within the formation.
- For LNAPL, airflow created along the free product/vadose zone interface will cause increased partitioning from the free-phase to the vapor phase.
- For DNAPL, in low permeability formations or with additional groundwater control, 2-Phase Extraction is capable of drawing the phreatic surface down to the confining layer. This allows for the target zone, which typically would be the at the confining layer for DNAPL, to be accessible to airflow and drainage from capillaries resulting in contaminated vapor and water recovery from the most contaminated zone in the formation.

10.2 Pilot Test Results

A pilot test was performed at the southwest corner of the site (near intersection of Main Street and Molnar Road), designated as AOC-1A, to evaluate the viability of the 2-Phase technology at this area. Due to the thinning of the silt layer, running sands, and subsurface structures (utility beds and steam tunnel), it was anticipated that vapor and groundwater flows would be

higher than at other portions of the site and pose the most difficulty for the 2-Phase technology.

The pilot test results indicate successful contaminant removal occurred with mass removal rates approximately 40 times greater in vapors than in groundwater illustrating its superior effectiveness over conventional pump and treat. The contaminated vapors recovered during the pilot test corresponded to approximately 7.4 pounds/hour of product recovery compared to 0.18 pounds/hour in the recovered contaminated water. This demonstrated that with the conditions observed during the pilot test, the 2-Phase Extraction system was 40 times more effective than a conventional pump and treat system. The pilot test was performed on two existing wells; CW-5 and MW-17. The details of the pilot test procedures are provided in Appendix C. The results of the pilot test on each of the wells are presented below.

Well CW-5 - Extraction Well

Duration: 110-minutes
Average Vapor Flow Rate: 125-scfm
Average Water Flow Rate: 3.4-gpm
Vacuum Applied at Vacuum Truck: 13-in-Hg
Vacuum at Well Head: 6-in-Hg
Vacuum on Well Screen: 2-in-Hg
Contaminant Removal Rate in Vapor: 7.36-lbs/hour
Contaminant Removal Rate in Water: 0.18-lbs/hour
Groundwater Drawdown in Observation Wells*: ≤ 0.1-feet in all wells
Vacuum in Observation Wells*: 1.0-in-H_2 at MW-22, ≤ 1.0-in-$H_2$0 in all other wells

Well MW-17 - Extraction Well

Duration: 265-minutes
Average Vapor Flow Rate: 120-scfm
Average Water Flow Rate: 2-gpm
Vacuum Applied at Vacuum Truck: 12-in-Hg
Vacuum at Well Head: 6-in-Hg
Vacuum on Well Screen: 3-in-Hg
Contaminant Removal Rate in Vapor: 2.06-lbs/hour
Contaminant Removal Rate in Water: 0.24-lbs/hour
Groundwater Drawdown in Observation Wells*: 1-foot in MW-1, ≤ 0.1-feet in all other wells
Vacuum in Observation Wells*: ≤ 1.0-in-H_2O in all wells

* - Observation wells included CW-6, MW-22, MW-17 and MW-1 for the CW-5 pilot test and MW-1, CW-6, CW-5, MW-22, and CW-4 for the MW-17 pilot test.

As was expected, the AOC-1A area yielded high vapor and water flow rates. The high vapor and water flow rates may be attributed to the thinning of the silt layer, the presence utility beds (water and sewer) and other subsurface structures along Main Street. Although there was a loss of vacuum due to the high vapor and water flow rates, the contaminant removal rates were substantially higher than those expected from a conventional pump and treat or a dual-pump system. Based on the measurements collected during the pilot test results, it is believed that the addition of a subsurface low-permeable containment structure (sheetpiling) around the treatment area in AOC-1A would enhance the efficiency of contaminant removal by reducing venting through utilities and from adjacent properties. Installation of sheetpiling around the perimeter of the extraction area at AOC-1A should result in a reduction of water and vapor flow rates. This reduction in the vapor flow would likely increase the vacuum on the well screen by three times or more, confining the vacuum to the target area and equate to a comparable increase in contaminant removal rates. The need for installation of a containment structure at other 2-Phase Extraction areas will be evaluated based on the subsurface information collected during the pre-construction phase.

10.3 Site-Specific Application

This section provides details on the application of the 2-Phase technology for the site including the preliminary design parameters, description of the 2-Phase process, air and groundwater treatment processes and system monitoring. The discussion of the application is provided under the following sub-sections.

- Pre-Construction Tasks
- Strategy for Implementation
- Remedial Application Description
- Performance Monitoring
- Permit Requirements
- Additional Areas of Application

10.3.1 Pre-Construction Tasks

Prior to the installation of the 2-Phase system, a subsurface investigation will be performed which will include performing borings in the extraction area. The subsurface investigation will be tailored to collect information for the configuration and the possible installation of the sheet piling and additional extraction/monitoring well, where necessary. Additionally, information, such as the conditions of the confining layer, will be noted along with the depth at which the confining layer is encountered.

Following the subsurface investigation, additional extraction/monitoring wells will be installed in target areas, where necessary. Refer to Figure 13, for proposed extraction well locations for AOC-1A. These locations are approximate and actual locations will be determined by field conditions.

Wells in the target area and the vicinity will be sampled prior to the implementation of the 2-Phase technology. Approximately six to eight wells will be sampled for VOCs (VO+10 by Method 624) and PCBs (Method 608). The data from this sampling event will be utilized as the baseline for comparison after remediation.

Based upon the information available, the 2-Phase system will be designed and project specifications will be developed prior to installation. Based on the measurements collected during the pilot test results, it is believed that the addition of a subsurface low-permeable containment structure (sheetpiling) around the treatment area in AOC-1A would enhance the efficiency of contaminant removal by reducing venting through utilities and from adjacent properties. Based on the available sub-surface information for the specific area of application, specifications will be developed for the containment structure, if needed. The sheetpiling structure for the area will be removed following the termination of the 2-Phase operation.

The design and project specifications will include the following:

- Configuration of the sheet piling and extraction/monitoring wells
- Equipment specifications for the 2-Phase system, and groundwater and vapor treatment system components
- Design layout for the 2-Phase Extraction system, and groundwater and vapor treatment components

10.3.2 Strategy for Implementation

As discussed in Section 7.1, the source areas have been divided into six (6) separate areas for application of 2-Phase Extraction technology (AOC-1A through AOC-1F). The 2-Phase

Extraction will be implemented in a stepwise approach, commencing at the most upgradient area and proceeding to further downgradient areas. The proposed strategy for this site is to initiate 2-Phase Extraction at AOC-1A (Section 7.1, Figure 13). Prior to 2-Phase application in an area, a containment structure will be constructed for that area if needed. The duration for which the 2-Phase Extraction operation is continued in a certain area will depend on the baseline concentrations, the efficiency of the system, and the performance criteria (Section 10.3.4). The containment structure for each area will be removed following the termination of the 2-Phase operation in that area.

10.3.3 Remedial Application Description

The conceptual process arrangement is shown in Figure 14 below and the process is schematically shown on Figure 15 (attached). The existing warehouse building will contain all the equipment for the 2-Phase Extraction skid and the treatment components. The vapor capacity and the motor sizing for the 2-Phase Extraction skid will be developed during the design phase. The skid will include a self-contained seal oil circulation system; an inlet separator to separate the water and vapor phases; a water transfer pump with filters; a vapor conditioning system, if required; and a common control panel with emergency shutdowns.

The water and vapor recovered and separated at the skid will undergo treatment prior to their respective discharge points. We anticipate the water treatment components to include air stripper(s), granular-activated carbon vessel(s), and filter units to achieve the appropriate discharge limits for the effluent to the Passaic Valley Sewerage Commissioners (PVSC) sewer line. The vapor treatment components will include a catalytic or thermal oxidizer and a scrubber to achieve the permit limits for VOCs and acid gas emissions at the discharge stack.

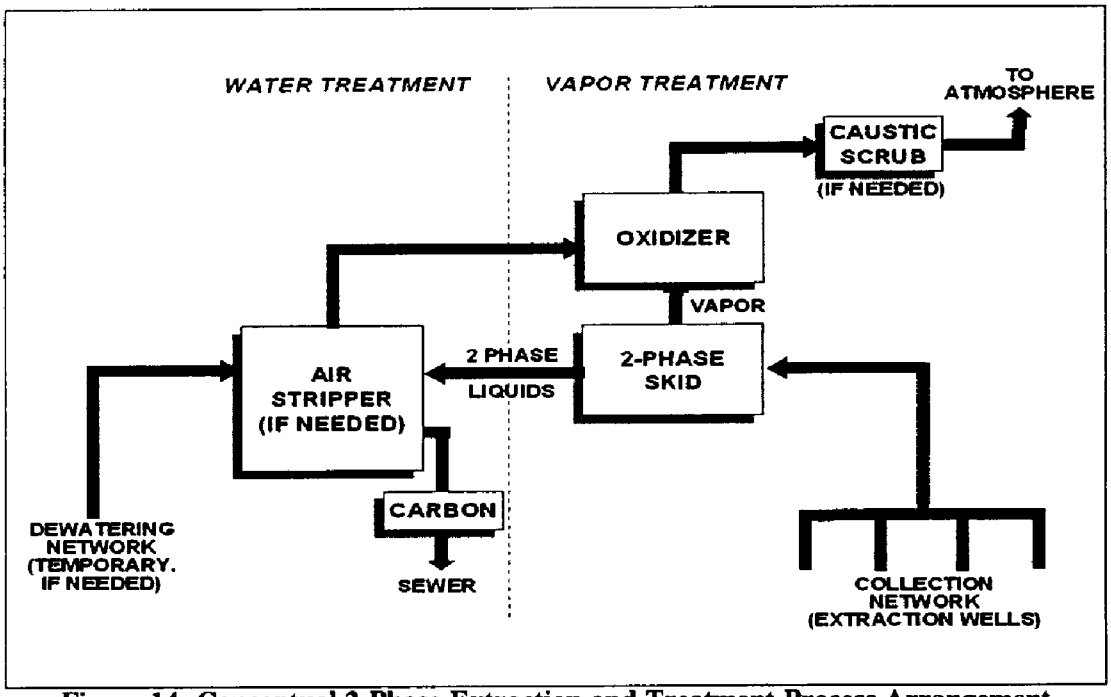

Figure 14: Conceptual 2-Phase Extraction and Treatment Process Arrangement

The 2-Phase Extraction wells will be cycled depending on flow rates and vacuum levels on the well screen to optimize the operation of the vacuum pump. The wells that are not operating will be used as observation wells, to evaluate the vacuum influence and water levels on the site. The piping header will transfer the recovered water and vapor to the treatment system located in the existing warehouse building. The treated groundwater will be

discharged to the PVSC sewer line. The treated vapor will be discharged to the atmosphere in compliance with the air permitting requirements.

10.3.4 Performance Monitoring

The proposed performance monitoring for the remedial system will include operational data for the extraction and treatment equipment and analysis of the recovered groundwater and soil vapor. Additionally, the effectiveness of the 2-Phase Extraction process will be assessed by sampling and analysis of the groundwater within the anticipated remedial zone, and where appropriate, observations for NAPLs.

Operational data of the equipment will be collected and recorded to maintain that the equipment is operating optimally. The data to be collected includes, groundwater flow, vapor flow, operating vacuum and pressures throughout the system, and operating temperatures throughout the system. This data will insure that the equipment is maintained at proper intervals and project scheduled down times for maintenance reasons. Initially, it is planned to collect this data one to two times per week at start-up then decrease to weekly, then monthly thereafter.

During the operation of the 2-Phase system, vapor and groundwater samples will be collected and tested for VOCs to verify and monitor mass removal rates. This data shall also be used to determine the treatment efficiencies and carbon loading. The analytical concentrations and the corresponding flow rates will be used to calculate the mass removal rates. The sampling frequency and required analytical methods will comply with the permits that are required. The frequency of the sampling events will be higher during the beginning of the system operation to develop a preliminary estimate of likely remedial duration and subsequently become lower over the duration of the operation. When concentrations in the vapor and water reach asymptotic conditions, the operation of the 2-Phase system will be terminated.

Groundwater monitoring will include the wells that are sampled as the baseline and will be periodically sampled for VOCs to determine the effectiveness of the extraction system. Initially, the periodic sampling will occur quarterly, until the system effectiveness is predicted and then the sampling frequency will be reduced to semi-annually. During the groundwater sampling, groundwater elevations will be also collected to evaluate the capture zone.

In the LNAPL and DNAPL source areas, wells will be monitored for NAPL presence using an interface probe. The product monitoring will be conducted at the time of weekly site visits. Additionally, we plan to investigate DNAPL presence and collect groundwater samples for VOC analyses using alternative groundwater sampling techniques (for example, temporary well points) at locations within the area of 2-Phase implementation. The data from the temporary points, in addition to the data from the monitoring wells, will enable us to evaluate the groundwater quality and observations for DNAPL over the area of the application. This will also allow us to assess if the data from the wells is representative of the area.

10.3.5 Permits Required

Several permits will be obtained prior to the construction and operation of the 2-Phase Extraction System, and the groundwater and vapor treatment components as listed below:

- Sewer Use Permit: At the request of the PVSC, the Sewer Permit was terminated in November 1998 when the groundwater treatment system was dismantled prior to demolition activities. Therefore, the PVSC Sewer Use Permit will be re-instated by completing a new Sewer Use Permit Application to the PVSC. Additionally, a Treatment Works Approval (TWA) will be obtained since the discharge to the PVSC sewer is expected to exceed 8,000 gallons per day.

- Air Permit will be required for the VOC emissions from the 2-Phase Extraction system. As discussed in Section 10.3.3, the vapor phase from the 2-Phase Extraction will be treated using a Catalytic or a Thermal Oxidizer. An application for the construction and operation of the 2-Phase Extraction system will be submitted to the NJDEP's Bureau of New Source Review.

- Air Permit will also be required for the vapor phase VOC emissions from the air-stripping of the recovered groundwater. Hexcel has a temporary air permit in place for operation of the existing groundwater treatment system. Due to the change in the location of the groundwater treatment system (from Building 1 pit to the Warehouse), a minor modification request will be submitted for the existing air permit.

11.0 HYDROGEN RELEASE COMPOUND

Hydrogen Release Compound™ (HRC™) application has been evaluated for the Hexcel site as a "polishing" step to achieve the site-specific cleanup objectives, if needed, following the 2-Phase Extraction application. HRC is a proprietary product of Regenesis, Inc., who also markets Oxygen Release Compound™ (ORC™). HRC is food quality polylactate ester that releases lactic acid upon hydration. Indigenous anaerobic microbes metabolize the lactic acid and produce hydrogen, which can in turn be used by reductive dehalogenators to dechlorinate the chlorinated aliphatic hydrocarbons (CAHs), such as PCE, TCE, TCA dissolved in groundwater. At the present time, HRC applications are fairly new but seem to be gaining regulatory acceptance. The HRC application technology will be further assessed upon completion of the 2-Phase application at the site to evaluate its site-specific applicability for the Hexcel site.

12.0 REMEDIATION GOALS

The remedial strategy for the site has been developed to achieve the site-specific remediation goals, which are consistent with the technical regulations and the remediation requirements stated by the NJDEP, in its 27 May 1998 letter to Hexcel. Specifically, the NJDEP had advised that, for consistency with remediation requirements for the Napp Technologies, Inc. site, Hexcel shall:

a. Contain or remove all site-related free and residual LNAPL and DNAPL, both above and below the water table, pursuant to the Technical Requirements for Site Remediation (TRSR, N.J.A.C. 7:26E-6.1(d)];

b. Contain and remove all additional site-related sources of ground water contamination to the extent necessary to successfully complete a natural remediation program that has been performed in accordance with the TRSR [N.J.A.C. 7:26E-6.3(d);

c. Perform whatever actions are necessary to prevent site-related exceedances of FW2 Surface Water Quality Criteria (SWQC) of the Surface Water Quality Standards (N.J.A.C. 7:9B) within the Saddle River.

The remedial plan presented in this RAWA is consistent with the above-listed objectives. Specifically, as presented in the discussion of AOC-1 (Section 7.1), source areas of LNAPL and DNAPL, and additional areas of soil and groundwater contamination have been identified for remediation by implementation by 2-Phase Extraction. Upon completion of the 2-Phase, site related sources will have been removed or contained sufficiently to complete a natural remediation program. The site-specific remediation performance criteria to achieve the requirements listed in items a), b), and c) above will be evaluated as discussed below.

The success in achieving the remediation requirement listed in the item a) above will be evaluated as follows:

- Removal of free product (LNAPL and DNAPL): 2-Phase Extraction will be applied in the shallow formation in areas of LNAPL and DNAPL which will remove NAPL as is practical for in-situ technologies, and lead to an improvement in the groundwater quality at the site. This performance objective will be measured by monitoring the wells in each source area for presence of product and by the indication of asymptotic conditions of VOCs concentrations in recovered vapor and water in each target area.

- In addition to monitoring of the wells in each target area, groundwater samples will be collected from additional locations in the target area to evaluate groundwater quality over the area. Groundwater concentrations will be less than 1% of a compounds solubility, at a minimum.

The success in achieving the remediation requirement listed in the item b) above will be evaluated as follows:

- No increasing trend in the lower overburden (deep aquifer): The success of the groundwater remediation activities will also be evaluated based on the groundwater quality in the lower aquifer. Hexcel will continue to monitor the deep wells for VOCs and commence monitoring of a newly installed bedrock well, subsequent to shallow remediation in AOC-1A, to evaluate the success of the remediation process. The active remediation at the site will be focused towards the shallow formation where the source of contamination is present. Although concentrations of VOCs exceeding the GWQS have been detected in the deep wells, no free product has ever been detected in any of the lower overburden wells. With the implementation of the remediation activities in the shallow formation source areas, the groundwater quality in the deep formation can be expected to improve, although it may take some time for this to be demonstrated.

- Elimination of Surface Exposure to PCBs: In this RAWA, Hexcel has proposed excavation of areas with PCBs exceeding 100 ppm levels within 2 feet depth from the ground surface. Appropriate sampling will be performed to evaluate whether the post-remediation surface samples meet the 100 ppm level criteria. Additionally, the areas will be capped and a Deed Notice will be established for the areas.

- Containment of mobile subsurface PCBs and reduction in PCB concentrations: The mobility of the subsurface PCBs will be sufficiently reduced by remediation of DNAPL and LNAPL source areas. PCBs at the site have been found to be associated with both LNAPLs and DNAPLs. Hexcel proposes to re-evaluate the locations of PCB exceedances (>100 ppm) following implementation of the 2-Phase Extraction remediation process. The residual concentrations of PCBs in soil will be evaluated with respect to the impact on groundwater quality and if necessary, a petition for a risk-based alternate standard will be submitted to the regional USEPA administrator and the NJDEP case manager for consideration, should PCBs exceed accepted levels after remediation.

- Upon removal of all known site-related sources of groundwater contamination, monitoring will be consistent with a natural remediation program, and institutional and engineering controls will be applied as necessary.

The success in achieving the remediation requirement listed in the item c) above will be evaluated as follows:

- Conformance of surface water samples from the Saddle River with the SWQC: The compliance of surface water samples to the Surface Water Quality Criteria (SWQC) is

a primary performance criteria of the remediation plan. Upon NJDEP's approval of surface water sampling proposal presented within this RAWA, a baseline for surface water quality will be established. With the implementation of the remediation activities, an enhancement in the surface water quality can be expected due to the reduction of contaminants discharged to the river from Hexcel, if there are no pollutants introduced to the River from upstream sources.

- No increasing trend in monitoring wells along the Saddle River: With the remediation of NAPL sources at the site, the quality of groundwater discharging into the Saddle River can be expected to improve. If it can be established that the concentrations of VOCs are not increasing in the wells along the Saddle River and if the performance criteria listed above (conformance of surface water samples from the Saddle River with the SWQC) is met, it can be expected that the site-related exceedances of SWQC will be prevented. This will fulfill the remediation requirement listed in item c) above.

13.0 REMEDIATION COSTS

Based on the proposed remedial strategy, the costs estimates for implementation of 2-Phase Extraction in the source areas, implementation of engineering and institutional controls, and additional tasks including monitoring, are provided in Table XV below. The cost estimate below assumes that the 2-Phase Extraction System will be operational for 3 years total (an average of 9 months in each source area identified, AOC-1A through AOC-1F).

Table XV: Estimated Remediation Costs

Task	Estimated Costs
Capital Costs (includes 2-Phase skid, dewatering system components, and sheetpile)	$900,000
Design, Engineering and Construction Monitoring	$250,000
Installation of 2-Phase System and Groundwater Treatment Components including connection to PVSC sewer line	$300,000
Operation and Maintenance including analytical testing for performance monitoring, electrical and gas consumption, site visits, support personnel, and PVSC discharge fees	$1,700,000 (over 3 years)
Permitting and Reporting including air and PVSC permits, Treatment Works Approval, Discharge Monitoring Reports, additional reporting and negotiations with NJDEP	$250,000
Additional tasks including excavation of surface PCBs, asphalt cover over site, groundwater and surface water monitoring, ecological assessment, bedrock investigation, closure of industrial sewer line, steam tunnel, and abandonment of production well	$1,300,000
Total Remediation Costs	**$4,700,000**

Note: The cost estimate presented in Table XV assumes that the implementation of 2-Phase in the source areas will be sufficient to achieve the site-specific remediation objectives discussed in Section 12 of the RAWA. Therefore, the cost estimate does not include the cost of an HRC application.

14.0 REMEDIATION SCHEDULE

Based on Haley & Aldrich's experience with the 2-Phase Extraction Technology, we estimate operating the 2-Phase for an average of 9 months in each of the source areas identified. As discussed earlier, the duration for which 2-Phase Extraction operation is continued in a certain area will depend on the baseline concentrations, the efficiency of the system, and the performance criteria. Assuming an average of 9- month application in each area where 2-Phase Extraction process is proposed to be applied, the estimated schedule is provided in Table XVI below.

Table XVI: Estimated Schedule for Remediation

Activity/Application	Estimated Schedule
Submission of RAWA	November 1999
NJDEP's Approval of the RAWA	February 2000
Obtain Air and Groundwater Discharge Permits; Pre-Construction Tasks; System Design; Prepare Bid Specifications; Review Proposals from Contractors; Procure Equipment Additional Investigation Activities proposed in the RAWA including groundwater sampling, surface water sampling, and ecological assessment Excavation of Surface PCBs and Post-Excavation Sampling	March 2000 through December 2000
Commence 2-Phase in AOC-1A	January 2001
Implement and Continue 2-Phase in additional source areas	3 Years (Till December 2003)
Apply HRC, if appropriate Remove PCBs, if necessary	2004
Apply Engineering and Institutional Controls including a Classification Exception Area (CEA) and Deed Notice, if required	2004 or 2005
Continued groundwater monitoring as part of the CEA	Until site-specific cleanup objectives (Section 12) are met

TABLES

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
102	9/1/88	Environ	536A-0102-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0102-SB02	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			536A-0102-SB03	4.5-5.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0102-SB04	6.0-6.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0102-SB04DL	6.0-6.5	--	Yes	--	--	--	--	--	--	--
			536A-0102-SB05	6.5-7.0	Yes	--	--	--	--	Yes	--	--	--
103(MW3)	8/1/88	Environ	536A-0103-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0103-SB02	1.5-2.0	--	Yes	--	--	--	Yes	--	--	--
			536A-0103-SB03	4.5-5.0	Yes	--	--	--	--	Yes	--	--	--
			536A-0103-SB04	5.5-6.0	Yes	--	--	--	--	Yes	--	--	--
			536A-0103-SB05	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0103-SB06	24.0-24.5	Yes	--	--	--	--	Yes	--	--	--
104(MW18)	8/1/88	Environ	536A-0104-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0104-SB02	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			536A-0104-SB03	5.5-6.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0104-SB04	6.0-6.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0104-SB05	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
105	9/1/88	Environ	536A-0105-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0105-SB02	1.5-2.0	--	Yes	--	--	Yes	Yes	--	--	--
			536A-0105-SB22	1.5-2.0	--	--	--	--	Yes	Yes	--	--	--
			536A-0105-SB03	4.0-4.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0105-SB04	6.5-7.0	Yes	--	--	--	--	Yes	--	--	--
			536A-0105-SB05	7.5-8.0	Yes	--	--	--	--	Yes	--	--	--
106	9/1/88	Environ	536A-0106-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0106-SB11	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0106-SB02	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			536A-0106-SB22	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			536A-0106-SB03	4.0-4.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0106-SB04	6.0-6.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0106-SB05	6.5-7.0	Yes	--	--	--	--	Yes	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
107	8/1/88	Environ	536A-0107-SB01	4.0-4.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0107-SB02	6.0-6.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0107-SB03	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
108	8/1/88	Environ	536A-0108-SB01	4.0-4.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0108-SB02	6.0-6.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0108-SB03	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
109	8/1/88	Environ	536A-0109-SB01	4.0-4.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0109-SB02	6.0-6.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-0109-SB03	11.5-12.0	Yes	--	--	--	--	Yes	--	--	--
110	9/1/88	Environ	536A-0110-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0110-SB02	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			536A-0110-SB03	5.0-5.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0110-SB04	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
			536A-0110-SB05	8.0-8.5	Yes	--	--	--	--	Yes	--	--	--
113	4/20/92	Heritage	113-002	2.0-4.0	--	Yes	--	--	--	--	--	--	--
			113-003	4.0-5.0	--	Yes	Yes	Yes	Yes	Yes	Yes	--	Yes
201	9/1/88	Environ	536A-0201-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0201-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0201-SB03	4.5-5.0	--	Yes	--	--	--	--	--	--	--
			536A-0201-SB03DL	4.5-5.0	--	Yes	--	--	--	--	--	--	--
301	9/1/88	Environ	536A-0301-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0301-SB11	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0301-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0301-SB22	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0301-SB03	6.0-6.5	--	--	--	--	--	--	--	--	--
302	9/1/88	Environ	536A-0302-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0302-SB11	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0302-SB02	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-0302-SB22	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-0302-SB03	6.0-6.5	--	Yes	--	--	--	--	--	--	--
			536A-0302-SB03DL	6.0-6.5	--	Yes	--	--	--	--	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
303(MW 4)	8/1/88	Environ	536A-0303-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0303-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0303-SB03	5.5-6.0	--	Yes	--	--	--	--	--	--	--
			536A-0303-SB03DL	5.5-6.0	--	Yes	--	--	--	--	--	--	--
401	9/1/88	Environ	536A-0401-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0401-SB11	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0401-SB02	1.5-2.0	Yes	Yes	--	--	--	--	--	--	--
			536A-0401-SB22	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-0401-SB22RE	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-0401-SB03	5.0-5.5	Yes	Yes	--	--	--	--	--	--	--
501	9/1/88	Environ	536A-0501-SB01	0.5-1.0	Yes	--	--	--	Yes	--	--	--	--
			536A-0501-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0501-SB03	4.5-5.0	--	Yes	--	--	Yes	--	--	--	--
			536A-0501-SB03DL	4.5-5.0	--	Yes	--	--	--	--	--	--	--
502	9/1/88	Environ	536A-0502-SB01	0.5-1.0	Yes	--	--	--	Yes	--	--	--	--
			536A-0502-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0502-SB03	4.5-5.0	--	--	--	--	Yes	--	--	--	--
503	9/1/88	Environ	536A-0503-SB01	0.5-1.0	Yes	--	--	--	Yes	--	--	--	--
			536A-0503-SB11	0.5-1.0	Yes	--	--	--	Yes	--	--	--	--
			536A-0503-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0503-SB03	4.5-5.0	--	--	--	--	Yes	--	--	--	--
504	9/1/88	Environ	536A-0504-SB01	0.5-1.0	Yes	--	--	--	Yes	--	--	--	--
			536A-0504-SB02	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0504-SB03	4.5-5.0	--	--	--	--	Yes	--	--	--	--
507	4/20/92	Heritage	507-004	6.0-7.0	--	Yes	Yes	Yes	Yes	Yes	Yes	--	Yes
508	4/20/92	Heritage	508-004	6.0-8.0	Yes	--	--	--	--	Yes	--	--	--
601(MW7)	7/1/88	Environ	536A-0601-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0601-SB02	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			536A-0601-SB03	5.5-6.0	--	Yes	--	--	--	--	--	--	--
			536A-0601-SB03DL	5.5-6.0	--	Yes	--	--	--	--	--	--	--
602	12/1/88	Environ	536A-0602-SB01	6.5-7.0	--	--	--	--	--	Yes	--	--	--
604	12/1/88	Environ	536A-0604-SB01	13.5-14.0	--	--	--	--	Yes	--	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
605	12/1/88	Environ	536A-0605-SB01	16.0-16.5	--	--	--	--	Yes	--	--	--	--
606	12/1/88	Environ	536A-0606-SB01	14.0-14.5	--	--	--	--	Yes	--	--	--	--
607	12/1/88	Environ	536A-0607-SB01	13.0-13.5	--	--	--	--	Yes	--	--	--	--
608	12/1/88	Environ	536A-0608-SB01	14.0-14.5	--	--	--	--	Yes	--	--	--	--
609	12/1/88	Environ	536A-0609-SB01	14.0-14.5	--	--	--	--	Yes	--	--	--	--
613	4/20/92	Heritage	613-001	2.0-4.0	Yes	Yes	Yes	--	--	--	--	--	--
			613-004	5.0-6.0	Yes	Yes	Yes	--	--	Yes	--	--	--
701	9/1/88	Environ	536A-0701-SB01	1.0-1.5	Yes	--	--	--	--	--	--	--	--
			536A-0701-SB02	1.5-2.0	Yes	Yes	--	--	Yes	Yes	--	--	--
			536A-0701-SB03	5.5-6.0	Yes	--	--	--	Yes	Yes	--	--	--
702	9/1/88	Environ	536A-0702-SB01	1.0-1.5	Yes	--	--	--	Yes	Yes	--	--	--
			536A-0702-SB02	1.5-2.0	Yes	--	--	--	--	--	--	--	--
			536A-0702-SB03	6.0-6.5	Yes	Yes	--	--	Yes	Yes	--	--	--
			536A-0702-SB04	11.0-11.5	--	--	--	--	--	--	--	--	--
703	9/1/88	Environ	536A-0703-SB01	1.0-1.5	Yes	--	--	--	--	--	--	--	--
			536A-0703-SB02	1.5-2.0	Yes	Yes	--	--	Yes	Yes	--	--	--
			536A-0703-SB03	6.0-6.5	Yes	--	--	--	Yes	Yes	--	--	--
704	9/1/88	Environ	536A-0704-SB01	13.0-13.5	--	--	--	--	--	--	--	--	--
705	9/1/88	Environ	536A-0705-SB01	13.0-13.5	--	--	--	--	--	--	--	--	--
706	9/1/88	Environ	536A-0706-SB01	13.0-13.5	--	--	--	--	--	--	--	--	--
708	9/1/88	Environ	536A-0708-SB01	13.0-13.5	--	--	--	--	--	--	--	--	--
801	9/1/88	Environ	536A-0801-SB01	1.0-1.5	Yes	--	--	--	--	--	--	--	--
			536A-0801-SB02	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			536A-0801-SB03	4.0-4.5	--	Yes	--	--	--	--	--	--	--
901	9/1/88	Environ	536A-0901-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-0901-SB02	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			536A-0901-SB02RE	1.5-2.0	--	--	Yes	Yes	--	--	--	--	--
			536A-0901-SB03	5.0-5.5	--	--	--	--	--	--	--	--	--
902	9/1/88	Environ	536A-0902-SB01	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0902-SB02	7.5-8.0	--	Yes	--	--	--	--	--	--	--
903	9/1/88	Environ	536A-0903-SB01	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0903-SB02	6.0-6.5	--	Yes	--	--	--	--	--	--	--

TABLE I
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Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
904	9/1/88	Environ	536A-0904-SB01	1.5-2.0	--	--	--	--	--	--	--	--	--
			536A-0904-SB02	6.0-6.5	--	--	--	--	--	--	--	--	--
1001	9/1/88	Environ	536A-1001-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-1001-SB02	1.5-2.0	--	Yes	--	--	--	--	--	--	--
1002	9/1/88	Environ	536A-1002-SB01	1.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-1002-SB02	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-1002-SB03	5.5-6.0	Yes	--	--	--	--	--	--	--	--
1101	9/1/88	Environ	536A-1101-SB01	1.5-1.0	--	Yes	--	--	--	--	--	--	--
			536A-1101-SB02	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			536A-1101-SB03	6.0-6.5	--	Yes	--	--	--	--	--	--	--
1102	9/1/88	Environ	536A-1102-SB01	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-1102-SB01DL	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-1102-SB02	5.5-6.0	--	--	--	--	--	--	--	--	--
1103	9/1/88	Environ	536A-1103-SB01	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-1103-SB01DL	1.5-2.0	--	Yes	--	--	--	--	--	--	--
			536A-1103-SB02	6.0-6.5	--	--	--	--	--	--	--	--	--
1301	9/1/88	Environ	536A-1301-SB01	1.5-2.0	--	--	--	--	--	--	--	--	--
1302	9/1/88	Environ	536A-1302-SB01	1.0-1.5	Yes	--	--	--	--	--	--	--	--
			536A-1302-SB02	2.0-2.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1302-SB03	2.5-4.0	Yes	--	--	--	--	Yes	--	--	--
			536A-1302-SB04	7.0-7.5	Yes	--	--	--	--	Yes	--	--	--
1303	8/1/88	Environ	536A-1303-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-1303-SB02	1.5-2.0	Yes	Yes	--	--	--	Yes	--	--	--
1401	9/1/88	Environ	536A-1401-SB01	1.0-1.5	Yes	--	--	--	--	Yes	--	--	--
			536A-1401-SB02	1.5-2.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1401-SB03	4.0-4.5	Yes	--	--	--	--	Yes	--	--	--
1502	6/24/87	Environ	536A-1502-SB01	6.0-7.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1502-SB02	11.0-11.5	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1502-SB03	13.5-14.0	Yes	--	--	--	--	Yes	--	--	--
1503	6/24/87	Environ	536A-1503-SB01	8.5-9.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1503-SB02	11.5-12.0	Yes	--	--	--	--	Yes	--	--	--
1504	6/24/87	Environ	536A-1504-SB01	3.5-4.0	Yes	Yes	--	--	--	Yes	--	--	--

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Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
1505	6/24/87	Environ	536A-1505-SB01	4.0-4.5	Yes	Yes	--	--	--	Yes	--	--	--
1506	8/1/88	Environ	536A-1506-SB01	0.5-1.0	Yes	--	--	--	--	--	--	--	--
			536A-1506-SB02	1.5-2.0	Yes	Yes	--	--	--	Yes	--	--	--
			536A-1506-SB03	4.5-5.0	Yes	--	--	--	--	Yes	--	--	--
			536A-1506-SB04	8.0-8.5	Yes	--	--	--	--	Yes	--	--	--
A1	8/1/85	PAS	A1-44182	0.5-2.5	Yes	Yes	--	--	--	--	--	--	--
A2	8/1/85	PAS	A2-44181	0.5-2.5	Yes	Yes	--	--	--	--	--	--	--
A3	8/1/85	PAS	A3-44180	0.5-2.5	Yes	Yes	--	--	--	--	--	--	--
A4	8/1/85	PAS	A4-44179	0.5-2.5	Yes	Yes	--	--	--	--	--	--	--
A5	8/1/85	PAS	A5-44122	2.0-2.5	Yes	Yes	--	--	--	--	--	--	--
A6	8/1/85	PAS	A6-44123	2.0-3.5	Yes	Yes	--	--	--	--	--	--	--
A7	8/1/85	PAS	A7-44124	1.3-1.7	Yes	Yes	--	--	--	--	--	--	--
A8	8/1/85	PAS	A8-44184	2.0-3.5	Yes	Yes	Yes	--	--	--	--	--	--
A9	8/1/85	PAS	A9-44185	1.0-2.5	Yes	Yes	Yes	--	--	--	--	--	--
A10	8/1/85	PAS	A10-44118	1.5-2.0	Yes	Yes	Yes	--	--	--	--	--	--
			A10-44119	3.5-4.0	Yes	Yes	--	--	--	Yes	--	--	--
A11	8/1/85	PAS	A11-44120	1.5-2.0	Yes	Yes	Yes	--	--	Yes	--	--	--
			A11-44121	3.5-4.0	Yes	Yes	--	--	--	--	--	--	--
A12	8/1/85	PAS	A12-44109	2.0-4.0	Yes	Yes	--	--	--	Yes	--	--	--
A13	8/1/85	PAS	A13-44110	2.0-4.0	Yes	Yes	--	--	--	Yes	--	--	--
A14	8/1/85	PAS	A14-44111	2.0-4.0	Yes	Yes	--	--	--	Yes	--	--	--
A15	8/1/85	PAS	A15-44401	6.0-8.0	Yes	Yes	Yes	--	--	Yes	--	--	--
B1	8/1/85	PAS	B1-44116	1.5-2.0	--	Yes	Yes	--	Yes	--	--	--	--
B2	8/1/85	PAS	B2-44183	2.5-5.0	--	Yes	Yes	--	Yes	--	--	--	--
B3	8/1/85	PAS	B3-44117	1.5-2.0	--	Yes	Yes	--	Yes	--	--	--	--
B6	6/1/84	Tenech	B6-8000	1.0-3.0	--	--	--	--	--	--	--	--	--
			B6-8001	3.0-5.0	--	--	--	--	--	--	--	--	--
			B6-8002	5.0-7.0	--	--	--	--	--	--	--	--	--
			B6-8003	7.0-8.0	--	--	--	--	--	--	--	--	--
			B6-8004	9.5-10.5	--	--	--	--	--	--	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
B8	6/1/84	Tenech	B8-8009	2.5-5.0	--	--	--	--	--	--	--	--	--
			B8-8010	5.5-7.0	--	--	--	--	--	--	--	--	--
			B8-8011	8.0-9.0	--	--	--	--	--	--	--	--	--
B10	6/1/84	Tenech	B10-8013	3.0-5.0	--	--	--	--	--	--	--	--	--
			B10-8014	5.0-7.0	--	--	--	--	--	--	--	--	--
			B10-8015	7.0-8.0	--	--	--	--	--	--	--	--	--
			B10-8016	9.5-11.0	--	--	--	--	--	--	--	--	--
C-1	6/1/85	PAS	C-1-40317	2.0-2.5	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-2	6/1/85	PAS	C-2-40318	0.5-1.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-3	6/1/85	PAS	C-3-40319	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-4	6/1/85	PAS	C-4-40320	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-5	6/1/85	PAS	C-5-40321	1.5-2.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-6	6/1/85	PAS	C-6-40332	2.0-2.5	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-7	6/1/85	PAS	C-7-40323	1.5-2.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C-8	6/1/85	PAS	C-8-40324	3.5-4.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C1	8/1/85	PAS	C1-44186	1.0-3.0	--	Yes	Yes	--	--	--	--	--	--
C2	8/1/85	PAS	C2-44187	2.0-4.5	--	Yes	Yes	--	--	--	--	--	--
C3	8/1/85	PAS	C3-44188	1.0-2.0	--	Yes	Yes	--	--	--	--	--	--
D1	8/1/85	PAS	D1-44125	2.0-2.5	--	Yes	Yes	--	Yes	--	--	--	--
D2	8/1/85	PAS	D2-44126	2.0-2.5	--	Yes	Yes	--	Yes	--	--	--	--
D3	8/1/85	PAS	D3-44127	2.0-2.5	--	--	--	--	Yes	--	--	--	--
D4	8/1/85	PAS	D4-44128	2.0-2.5	--	Yes	Yes	--	Yes	--	--	--	--
E1	8/1/85	PAS	E1-44189	0.5-2.5	Yes	--	--	--	Yes	--	--	--	--
E2	8/1/85	PAS	E2-44190	1.0-3.5	Yes	--	--	--	Yes	--	--	--	--
E3	8/1/85	PAS	E3-44191	1.0-2.5	Yes	--	--	--	Yes	--	--	--	--
F1	8/1/85	PAS	F1-44403	1.0-1.0	--	Yes	Yes	--	--	--	--	--	--
F2	8/1/85	PAS	F2-44404	1.0-1.0	--	Yes	Yes	--	--	--	--	--	--
F3	8/1/85	PAS	F3-44405	1.0-1.0	--	Yes	Yes	--	--	--	--	--	--
G1	8/1/85	PAS	G1-44112	0.0-2.0	--	Yes	Yes	--	--	--	--	--	--
G2	8/1/85	PAS	G2-44113	2.0-3.0	--	Yes	Yes	--	--	--	--	--	--
G3	8/1/85	PAS	G3-44114	2.0-3.0	--	Yes	Yes	--	--	--	--	--	--
G4	8/1/85	PAS	G4-44115	0.0-2.0	--	Yes	Yes	--	--	--	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
BR-UST-B	6/1/91	Heritage	BR TANK BOTTOM	10.0-10.0	Yes	Yes	--	--	--	Yes	--	--	--
BR-UST-E	6/1/91	Heritage	BR TANK EAST	5.0-5.0	Yes	Yes	--	--	--	Yes	--	--	--
BR-UST-N	6/1/91	Heritage	BR TANK NORTH	5.0-5.0	Yes	Yes	--	--	--	Yes	--	--	--
BR-UST-S	6/1/91	Heritage	BR TANK SOUTH	5.0-5.0	Yes	Yes	--	--	--	Yes	--	--	--
BR-UST-W	6/1/91	Heritage	BR TANK WEST	5.0-5.0	Yes	Yes	--	--	--	Yes	--	--	--
GAS-UST-B	6/1/91	Heritage	REAR TANK BOTTOM	6.0-6.0	Yes	Yes	Yes	Yes	--	Yes	--	--	--
GAS-UST-E	6/1/91	Heritage	REAR TANK EAST	3.0-4.0	Yes	Yes	Yes	Yes	--	Yes	--	--	--
GAS-UST-N	6/1/91	Heritage	REAR TANK NORTH	5.0-5.0	Yes	Yes	Yes	Yes	--	Yes	--	--	--
GAS-UST-S	6/1/91	Heritage	REAR TANK SOUTH	5.0-5.0	Yes	Yes	Yes	Yes	--	Yes	--	--	--
GAS-UST-W	6/1/91	Heritage	REAR TANK WEST	3.0-4.0	Yes	Yes	Yes	Yes	--	Yes	--	--	--
HS-1	11/1/90	Heritage	HS-1 #002	3.0-5.0	--	--	--	--	--	--	--	--	--
			HS-1 #004	7.0-9.0	--	--	--	--	--	--	--	--	--
			HS-1 #006	11.0-13.0	--	--	--	--	--	--	--	--	--
			HS-1 #007	13.0-15.0	--	Yes	--	--	--	--	--	--	--
HS-2	11/1/90	Heritage	HS-2 #002	1.0-3.0	--	--	--	--	--	--	--	--	--
			HS-2 #003	3.0-5.0	--	--	--	--	--	--	--	--	--
			HS-2 #004	5.0-7.0	--	Yes	--	--	--	--	--	--	--
HS-3	11/1/90	Heritage	HS-3 #003	5.0-7.0	--	--	--	--	--	--	--	--	--
			HS-3 #004	7.0-9.0	--	Yes	--	--	--	--	--	--	--
HS-4	11/1/90	Heritage	HS-4 #002	3.0-5.0	--	--	--	--	--	--	--	--	--
			HS-4 #003	5.0-7.0	--	--	--	--	--	--	--	--	--
			HS-4 #005	9.0-11.0	--	Yes	--	--	--	--	--	--	--
HS-5	11/1/90	Heritage	HS-5 #003	5.0-7.0	--	--	--	--	--	--	--	--	--
			HS-5 #006	11.0-13.0	--	Yes	--	--	--	--	--	--	--
HS-6	11/1/90	Heritage	HS-6 #001	1.0-3.0	--	--	--	--	--	--	--	--	--
			HS-6 #003	5.0-7.0	--	--	--	--	--	--	--	--	--
			HS-6 #006	13.0-15.0	--	Yes	--	--	--	--	--	--	--
HS-8	11/1/90	Heritage	HS-8 #001	2.0-4.0	--	--	--	--	--	--	--	--	--
			HS-8 #002	4.0-6.0	--	--	--	--	--	--	--	--	--
			HS-8 #003	6.0-8.0	--	Yes	--	--	--	--	--	--	--

TABLE I
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Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
HS-9	11/1/90	Heritage	HS-9 #003	5.0-7.0	--	--	--	--	--	--	--	--	--
			HS-9 #004	7.0-8.5	--	--	--	--	--	--	--	--	--
			HS-9 #004B	8.5-9.0	--	Yes	--	--	--	--	--	--	--
HS-10	11/1/90	Heritage	HS-10 #002	3.0-5.0	--	--	--	--	--	--	--	--	--
			HS-10 #003	5.0-7.0	--	Yes	--	--	--	--	--	--	--
BG01(MW01	7/1/88	Environ	536A-BG01-SB01	5.5-6.0	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MW33	4/20/92	Heritage	MW33-004	6.0-8.0	--	Yes	Yes	Yes	Yes	Yes	Yes	--	Yes
			MW33-008	14.0-16.0	--	Yes	Yes	Yes	Yes	Yes	Yes	--	Yes
HA-1	7/30/98	H&A	HA-1-0.1-0.6	0.1-0.6	--	--	--	--	--	Yes	--	--	--
			HA-1-4.0-4.5	4.0-4.5	--	--	--	--	--	Yes	--	--	--
HA-2	7/30/98	H&A	HA-2-1.0-1.5	1.0-1.5	--	--	--	--	--	Yes	--	--	--
			HA-2-2.0-2.5	2.0-2.5	--	--	--	--	--	Yes	--	--	--
			HA-2-5.5-6.0	5.5-6.0	--	--	--	--	--	Yes	--	--	--
			DUP-1	5.5-6.0	--	--	--	--	--	Yes	--	--	--
HA-3	7/30/98	H&A	HA-3-1.5-2.0	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			HA-3-6.5-7.0	6.5-7.0	--	--	--	--	--	Yes	--	--	--
			HA-3-9.0-9.5	9.0-9.5	--	--	--	--	--	Yes	--	--	--
HA-4	7/30/98	H&A	HA-4-2.0-2.5	2.0-2.5	--	--	--	--	--	Yes	--	--	--
			HA-4-6.0-6.5	6.0-6.5	--	--	--	--	--	Yes	--	--	--
HA-5	7/30/98	H&A	HA-5-1.0-1.5	1.0-1.5	--	--	--	--	--	Yes	--	--	--
			DUP-2	1.0-1.5	--	--	--	--	--	Yes	--	--	--
			HA-5-5.0-5.5	5.0-5.5	--	--	--	--	--	Yes	--	--	--
			HA-5-7.0-7.5	7.0-7.5	--	--	--	--	--	Yes	--	--	--
HA-6	7/29/98	H&A	HA-6-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-6-9.0-9.5	9.0-9.5	--	--	--	--	--	Yes	--	--	--
			HA-6-11.5-12.0	11.5-12.0	--	--	--	--	--	Yes	--	--	--
HA-7	7/29/98	H&A	HA-7-1.5-2.0	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			HA-7-9.0-9.5	9.0-9.5	--	--	--	--	--	Yes	--	--	--
			HA-7-13.0-13.5	13.0-13.5	--	--	--	--	--	Yes	--	--	--
HA-8	7/29/98	H&A	HA-8-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-8-13.0-13.5	13.0-13.5	--	--	--	--	--	Yes	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
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Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
HA-9	7/29/98	H&A	HA-9-10.0-10.5	10.0-10.5	--	--	--	--	--	Yes	--	--	--
			HA-9-14..5-15.0	14.5-15.0	--	--	--	--	--	Yes	--	--	--
HA-10	7/29/98	H&A	HA-10-1.5-2.0	1.5-2.0	--	--	--	--	--	Yes	--	--	--
			HA-10-9.0-9.5	9.0-9.5	--	--	--	--	--	Yes	--	--	--
			HA-10.11.0-11.5	11.0-11.5	--	--	--	--	--	Yes	--	--	--
HA-11	7/30/98	H&A	HA-11-0.0-0.5	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-11-5.5-6.0	5.5-6.0	--	--	--	--	--	Yes	--	--	--
HA-12	7/30/98	H&A	HA-12-0.0-0.5	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-12-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-12-6.0-6.5	6.0-6.5	--	--	--	--	--	Yes	--	--	--
HA-13	7/30/98	H&A	HA-13-0.0-0.5	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-13-2.8-3.3	2.8-3.3	--	--	--	--	--	Yes	--	--	--
			HA-13-13.0-13.5	13.0-13.5	--	--	--	--	--	Yes	--	--	--
HA-14	7/30/98	H&A	HA-14-0.8-1.3	0.8-1.3	--	--	--	--	--	Yes	--	--	--
			HA-14-8.0-8.5	8.0-8.5	--	--	--	--	--	Yes	--	--	--
			HA-14-15.5-16.0	15.5-16.0	--	--	--	--	--	Yes	--	--	--
HA-15	7/30/98	H&A	HA-15-8.0-8.5	8.0-8.5	--	--	--	--	--	Yes	--	--	--
			HA-15-12.5-13.0	12.5-13.0	--	--	--	--	--	Yes	--	--	--
HA-16	7/31/98	H&A	HA-16-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			DUP-3	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-16-13.5-14.0	13.5-14.0	--	--	--	--	--	Yes	--	--	--
HA-17	7/31/98	H&A	HA-17-4.5-5.0	4.5-5.0	--	--	--	--	--	Yes	--	--	--
			HA-17-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-17-10.0-10.5	10.0-10.5	--	--	--	--	--	Yes	--	--	--
HA-18	7/31/98	H&A	HA-18-6.5-7.0	6.5-7.0	--	--	--	--	--	Yes	--	--	--
			HA-18-11.0-11.5	11.0-11.5	--	--	--	--	--	Yes	--	--	--
HA-19	7/31/98	H&A	HA-19-9.0-9.5	9.0-9.5	--	--	--	--	--	Yes	--	--	--
			HA-19-13.0-13.5	13.0-13.5	--	--	--	--	--	Yes	--	--	--
HA-20	7/30/98	H&A	HA-20-1.0-1.5	1.0-1.5	--	--	--	--	--	Yes	--	--	--
			HA-20-5.5-6.0	5.5-6.0	--	--	--	--	--	Yes	--	--	--
HA-21	7/31/98	H&A	HA-21-5.5-6.0	5.5-6.0	--	--	--	--	--	Yes	--	--	--
			HA-21-11.0-11.5	11.0-11.5	--	--	--	--	--	Yes	--	--	--

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Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
HA-22	7/31/98	H&A	HA-22-1.0-1.5	1.0-1.5	--	--	--	--	--	Yes	--	--	--
			HA-22-8.0-8.5	8.0-8.5	--	--	--	--	--	Yes	--	--	--
HA-23	8/28/98	H&A	HA-23-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-23-8.0-8.5	8.0-8.5	--	--	--	--	--	Yes	--	--	--
			HA-23-10.8-11.3	10.8-11.3	--	--	--	--	--	Yes	--	--	--
HA-24	8/28/98	H&A	HA-24-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-24-11.0-11.5	11.0-11.5	--	--	--	--	--	Yes	--	--	--
HA-25	8/28/98	H&A	HA-25-7.5-8.0	7.5-8.0	--	--	--	--	--	Yes	--	--	--
			HA-25-11.3-11.8	11.3-11.8	--	--	--	--	--	Yes	--	--	--
HA-26	8/28/98	H&A	HA-26-10.5-11.0	10.5-11.0	--	--	--	--	--	Yes	--	--	--
			HA-26-17.5-18.0	17.5-18.0	--	--	--	--	--	Yes	--	--	--
HA-27	8/28/98	H&A	HA-27-2.5-3.0	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-27-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-27-12.0-12.5	12.0-12.5	--	--	--	--	--	Yes	--	--	--
H-28	8/28/98	H&A	HA-28-2.0-2.5	2.0-2.5	--	--	--	--	--	Yes	--	--	--
			HA-28-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-28-12.5-13.0	12.5-13.0	--	--	--	--	--	Yes	--	--	--
HA-29	8/28/98	H&A	HA-29-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			DUP-4	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-29-14.5-15.0	14.5-15.0	--	--	--	--	--	Yes	--	--	--
HA-30	8/28/98	H&A	HA-30-8.5-9.0	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-30-15.5-16.0	15.5-16.0	--	--	--	--	--	Yes	--	--	--
HA-31	8/19/99	H&A	HA-31A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-31B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-31C	15.3-15.8	--	--	--	--	--	Yes	--	--	--
HA-32	8/19/99	H&A	HA-32A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-32B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-32C	14.5-15.0	--	--	--	--	--	Yes	--	--	--
HA-33	8/19/99	H&A	HA-33A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-33B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-33C	11.2-11.7	--	--	--	--	--	Yes	--	--	--

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Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
HA-34	8/19/99	H&A	HA-34A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-34B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-34C	9.0-9.5	--	--	--	--	--	Yes	--	--	--
HA-35	8/19/99	H&A	HA-35A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-35B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-35C	10.0-10.5	--	--	--	--	--	Yes	--	--	--
HA-36	8/19/99	H&A	HA-36A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-36B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-36C	8.5-9.0	--	--	--	--	--	Yes	--	--	--
			HA-36C-Dup	8.5-9.0	--	--	--	--	--	Yes	--	--	--
HA-37	8/19/99	H&A	HA-37A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-37B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-37C	14.5-15.0	--	--	--	--	--	Yes	--	--	--
HA-38	8/19/99	H&A	HA-38A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-38B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-38C	15.5-16.0	--	--	--	--	--	Yes	--	--	--
HA-39	8/19/99*	H&A	HA-39A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-39B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-39C	11.5-12.0	--	--	--	--	--	Yes	--	--	--
HA-40	8/19/99	H&A	HA-40A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-40B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-40C	15.3-15.8	--	--	--	--	--	Yes	--	--	--
HA-41	8/19/99	H&A	HA-41A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-41B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-41C	11.5-12.0	--	--	--	--	--	Yes	--	--	--
HA-42	8/19/99	H&A	HA-42A	0.0-0.5	--	--	--	-	--	Yes	--	--	--
			HA-42B	3.0-3.5	--	--	--	--	--	Yes	--	--	--
			HA-42C	4.0-4.5	--	--	--	--	--	Yes	--	--	--
HA-43	8/19/99	H&A	HA-43A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-43B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-43C	8.0-8.5	--	--	--	--	--	Yes	--	--	--

TABLE I
SUMMARY OF SOIL SAMPLES AND TESTED PARAMETERS
Hexcel Facilty
Lodi, New Jersey

Boring ID	Date of Sampling	Company	Sample ID	Depth (ft)	Parameters Tested								
					TPH	VOs	BNs	AE	Metals	PCBs	Cyan	Phen^	Pest
HA-44	8/19/99	H&A	HA-44A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-44B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-44C	8.0-8.5	--	--	--	--	--	Yes	--	--	--
HA-45	8/19/99	H&A	HA-45A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-45B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-45C	14.0-14.5	--	--	--	--	--	Yes	--	--	--
HA-46	8/19/99	H&A	HA-46A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			HA-46B	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-46B-Dup	2.5-3.0	--	--	--	--	--	Yes	--	--	--
			HA-46C	14.5-15.0	--	--	--	--	--	Yes	--	--	--
PCB-1	6/17/99	H&A	PCB-1A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			PCB-1B	0.8-1.1	--	--	--	--	--	Yes	--	--	--
PCB-2	6/17/99	H&A	PCB-2A	0.0-0.4	--	--	--	--	--	Yes	--	--	--
PCB-3	6/17/99	H&A	PCB-3A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			PCB-3B	1.5-2.0	--	--	--	--	--	Yes	--	--	--
PCB-4	6/17/99	H&A	PCB-4A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			PCB-4B	1.5-2.0	--	--	--	--	--	Yes	--	--	--
PCB-5	6/17/99	H&A	PCB-5A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			PCB-5B	1.2-1.5'	--	--	--	--	--	Yes	--	--	--
PCB-6	6/17/99	H&A	PCB-6A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
PCB-7	6/17/99	H&A	PCB-7A	0.0-0.5	--	--	--	--	--	Yes	--	--	--
			PCB-7B	1.0-1.2	--	--	--	--	--	Yes	--	--	--
Total Number of Samples analyzed* =					121	114	46	23	50	228	17	13	17

Notes:

*: Samples suffixed with a DL (meaning "dilution") at the end of the Sample ID are not included in the total.

^: These samples were analyzed for Total Phenols by the appropriate method; samples listed under AE were also analyzed for phenol as an Acid Extractable compound.

TABLE II
SUMMARY OF GROUNDWATER SAMPLING
Hexcel Facility
Lodi, New Jersey

Well ID	Sample ID	Company	Date (m/yy)	AE	BN	VOA	Metals	Pest/PCBs	Phenol	Cyanide	TPH
MW-1	536A-MW01-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW01-GW01DL	Environ	7/88	--	--	Yes	--	--	--	--	--
	536A-MW01-GW02	Environ	7/88	--	--	Yes	--	--	--	--	--
	E320255	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW01-166594	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	MW-1	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-2	536A-MW02-GW01	Environ	8/88	--	--	Yes	Yes	Yes	--	--	Yes
	536A-MW02-GW01DL	Environ	8/88	--	--	Yes	--	--	--	--	--
	536A-MW02-GW02	Environ	8/88	--	--	--	Yes	Yes	--	--	--
	E320256	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW02-166601	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	MW-2	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-3	536A-MW03-GW01	Environ	8/88	--	--	Yes	Yes	Yes	--	--	Yes
	536A-MW03-GW01RE	Environ	8/88	--	--	Yes	--	--	--	--	--
	E320257	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-3	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-4	536A-MW04-GW01	Environ	8/88	--	--	Yes	--	--	--	--	Yes
	536A-MW04-GW01DL	Environ	8/88	--	--	Yes	--	--	--	--	--
	E320258	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-4	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-5	536A-MW05-GW01	Environ	8/88	--	--	Yes	--	--	--	--	Yes
	E320259	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-5	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-6	536A-MW06-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW06-GW01DL	Environ	8/88	Yes	Yes	--	--	--	Yes		--
	536A-MW06-GWDP	Environ	8/88	--	--	Yes	--	Yes	--	--	--
	E320320	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-6	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-7	536A-MW07-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	E320321	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-7	H&A	7/98	--	--	Yes	--	Yes	--	--	--

TABLE II
SUMMARY OF GROUNDWATER SAMPLING
Hexcel Facility
Lodi, New Jersey

Well ID	Sample ID	Company	Date (m/yy)	AE	BN	VOA	Metals	Pest/PCBs	Phenol	Cyanide	TPH
MW-8	536A-MW08-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW08-GW01DL	Environ	8/88	--	--	Yes	--	--	--	--	--
	536A-MW08-GW02	Environ	8/88	--	--	Yes	--	--	--	--	--
	E320322	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-8	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-9	536A-MW09-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	E320323	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-9	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-10	536A-MW10-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW10-GW01DL	Environ	8/88	--	--	Yes	--	--	--	--	--
	E320324	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW10-166591	Environ	5/95	--	--	Yes	--	--	--	--	--
	4576A-MW10-166889	Environ	5/95	Yes	--	--	--	--	Yes	--	--
	MW-10	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-11	536A-MW11-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	E320325	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-11	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-12	536A-MW12-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	E320326	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-12	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-13	536A-MW13-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW13-GW11	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	E320327	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-13	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-14	536A-MW14-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MW-14	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-15	536A-MW15-GW01	Environ	7/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MW-15	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-16	536A-MW16-GW01	Environ	8/88	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	536A-MW16-GW02	Environ	8/88	--	--	--	Yes	--	--	--	Yes
	E320328	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW16-166592	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	MW-16	H&A	7/98	--	--	Yes	--	Yes	--	--	--

TABLE II
SUMMARY OF GROUNDWATER SAMPLING
Hexcel Facility
Lodi, New Jersey

Well ID	Sample ID	Company	Date (m/yy)	AE	BN	VOA	Metals	Pest/PCBs	Phenol	Cyanide	TPH
MW-17	536A-MW17-GW01	Environ	1/89	--	--	Yes	--	--	--	--	--
	E320260	Killam	7/93	--	--	Yes	--	--	--	--	--
MW-18	536A-MW18-GW01	Environ	8/88	--	--	Yes	Yes	Yes	--	--	--
	536A-MW18-GW01DL	Environ	8/88	--	--	Yes	--	--	--	--	--
	E320261	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW18-166596	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
MW-19	536A-MW19-GW01	Environ	1/89	--	--	Yes	--	--	--	--	--
	MW-19	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-20	MW-20	Heritage	11/90	Yes	Yes	Yes	--	Yes	Yes	Yes	--
	MW-20A	Heritage	11/90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	--
	MW-20 Dup	Heritage	11/90	--	--	Yes	--	--	--	--	--
	MW-20-S-2242	Heritage	12/90	--	--	Yes	--	--	--	--	--
	E320262	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-20	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-21	MW-21	Heritage	10/90	Yes	Yes	Yes	--	Yes	Yes	--	Yes
	E320263	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-21	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-22	E320264	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-22	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-23	MW-23	Heritage	11/90	--	--	Yes	--	--	--	--	Yes
	ENSRMW-2	ENSR	5/95	--	--	Yes	Yes	Yes	--	--	--
	4576A-MW23-166593	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	MW-23	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-24	MW-24	Heritage	11/90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	--
	E320329	Killam	7/93	--	--	Yes	--	--	--	--	--
	4576A-MW24-166600	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	MW-24	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-25	MW-25	Heritage	11/90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	--
	E320330	Killam	7/93	--	--	Yes	--	--	--	--	--
MW-26	MW-26	Heritage	12/90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	--
	MW-26	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-27	MW-27	Heritage	11/90	--	--	Yes	--	--	--	--	--
	MW-27	H&A	7/98	--	--	Yes	--	Yes	--	--	--

TABLE II
SUMMARY OF GROUNDWATER SAMPLING
Hexcel Facility
Lodi, New Jersey

Well ID	Sample ID	Company	Date (m/yy)	AE	BN	VOA	Metals	Pest/PCBs	Phenol	Cyanide	TPH
MW-28	MW-28	Heritage	11/90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	--
	E320331	Killam	7/93	--	--	Yes	--	--	--	--	--
	MW-28	H&A	7/98	--	--	Yes	--	Yes	--	--	--
MW-29	ENSRMW-3	ENSR	5/95	--	--	Yes	Yes	Yes	--	--	--
MW-30	ENSRMW-1	ENSR	5/95	--	--	Yes	Yes	Yes	--	--	--
MW-31	E320265	Killam	7/93	--	--	Yes	--	--	--	--	--
	ENSRMW-4	ENSR	5/95	--	--	Yes	Yes	Yes	--	--	--
MW-32	MW32	Heritage	4/92	--	--	Yes	--	--	--	--	--
MW-33	MW33	Heritage	4/92	--	--	Yes	--	--	--	--	--
	MW-33	H&A	7/98	--	--	Yes	--	Yes	--	--	--
CW-1	CW-1	Heritage	4/92	--	--	Yes	--	--	--	--	--
	E320266	Killam	7/93	--	--	Yes	--	--	--	--	--
CW-2	CW-2	Heritage	4/92	--	--	Yes	--	--	--	--	--
CW-3	CW-3	Heritage	10/90	Yes	Yes	Yes	--	Yes	Yes	--	Yes
	E320247	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320247R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-5	E320248	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320248R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-6	4576A-CW6-166597	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
CW-7	4576A-CW7P-166595	Environ	5/95	--	--	Yes	--	--	--	--	--
	4576A-CW7P-166599	Environ	5/95	--	--	Yes	--	Yes	--	--	--
	4576A-CW7-166602	Environ	5/95	Yes	--	--	--	--	Yes	--	--
CW-9	E320249	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320249R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-10	CW10	Heritage	4/92	--	--	Yes	--	--	--	--	--
	E320332	Killam	7/93	--	--	Yes	--	--	--	--	--
CW-11	CW-11	Heritage	10/90	Yes	Yes	Yes	--	Yes	Yes	--	Yes
	E320250	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320250R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-12	4576A-CW12-166604	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
	4576A-CW12D-166605	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--
CW-14	E320333	Killam	7/93	--	--	Yes	--	--	--	--	--

TABLE II
SUMMARY OF GROUNDWATER SAMPLING
Hexcel Facility
Lodi, New Jersey

Well ID	Sample ID	Company	Date (m/yy)	AE	BN	VOA	Metals	Pest/PCBs	Phenol	Cyanide	TPH
CW-15	E320251	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320251R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-19	E320252	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320252R	Killam	7/93	--	--	--	--	Yes	--	--	--
CW-21	E320253	Killam	7/93	--	--	Yes	--	Yes	--	--	--
	E320253R	Killam	7/93	--	--	--	--	Yes	--	--	--
RW6-1	RW6-1	Heritage	11/90	--	--	Yes	--	--	--	--	--
RW6-2	RW6-2	Heritage	11/90	--	--	Yes	--	--	--	--	--
	E320334	Killam	7/93	--	--	Yes	--	--	--	--	--
RW6-3	RW6-3	Heritage	11/90	--	--	Yes	--	--	--	--	--
RW7-8	4576A-RW7-8-166603	Environ	5/95	Yes	--	Yes	--	--	Yes	--	--

TABLE III

VOLATILE ORGANIC COMPOUNDS EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)			Impact to Groundwater Soil Cleanup Criteria* (mg/kg)	Comments
102	9/1/88	536A-0102-SB04	6.0-6.5	Chlorobenzene	3.2	(U)		1	Note (a)
				Tetrachloroethene	1.7	(U)		1	Note (a)
				Trans-1,2-Dichloroethene	110.0	(U)		50	Note (a)
104(MW18)	8/1/88	536A-0104-SB03	5.5-6.0	Chlorobenzene	53.0			1	
	8/1/88	536A-0104-SB04	6.0-6.5	Chlorobenzene	67.0			1	
105	9/1/88	536A-0105-SB02	1.5-2.0	Tetrachloroethene	10.0			1	
201	9/1/88	536A-0201-SB03	4.5-5.0	1,1,2,2-Tetrachlororethane	79.0	(120)		1	Note (a)
				1,1,2-Trichloroethane	79.0	(U)		1	Note (a)
				Carbon Tetrachloride	22.0	(44)		1	Note (a)
				Tetrachloroethene	5500.0	(8500)		1	Note (a)
				Trichloroethene	100.0	(280)		1	Note (a)
				1,1,1-Trichloroethane	110.0	(280)		50	Note (a)
				Chlorobenzene	25.0	(32)		1	Note (a)
302	9/1/88	536A-0302-SB02	1.5-2.0	Tetrachloroethene	7.6			1	
	9/1/88	536A-0302-SB22	1.5-2.1	Tetrachloroethene	1.9			1	
	9/1/88	536A-0302-SB03	6.0-6.5	Tetrachloroethene	61.0	(54)		1	Note (a)
				Trichloroethene	U	(3.1)		1	Note (a)
303 (MW4)	8/1/88	536A-0303-SB03	5.5-6.0	1,1,2,2-Tetrachloroethane	6.0	(U)	J	1	Note (a)
				Chlorobenzene	150.0	(U)	J	1	Note (a)
				Carbon Tetrachloride	5.8	(U)	J	1	Note (a)
				1,2-Dichloroethane	5.8	(U)	J	1	Note (a)
				Methylene Chloride	64.0	(190)	J	1	Note (a)
				Tetrachloroethene	5500.0	(3000)		1	Note (a)
				Trichloroethene	470.0	(2800)	J	1	Note (a)
401	9/1/88	536A-0401-SB03	5.0-5.5	Tetrachloroethene	13.0			1	
501	9/1/88	536A-0501-SB03	4.5-5.0	1,1,2,2-Tetrachloroethane	49.0	(U)		1	Note (a)
				Chlorobenzene	5.1	(U)		1	Note (a)
				Tetrachloroethene	4000.0	(2400)		1	Note (a)
				Trichloroethene	18.0	(U)		1	Note (a)

TABLE III

VOLATILE ORGANIC COMPOUNDS EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)		Impact to Groundwater Soil Cleanup Criteria* (mg/kg)	Comments
601(MW7)	7/1/88	536A-0601-SB02	1.5-2.0	Chlorobenzene	2.6		1	
				Methylene Chloride	4.6		1	
	7/1/88	536A-0601-SB03	5.5-6.0	Chlorobenzene	9.8	(9.3)	1	Note (a)
				Methylene Chloride	2.0	(5.1)	1	Note (a)
				Tetrachloroethene	2.6	(2.7)	1	Note (a)
613	4/20/92	613-004	5.0-6.0	Chlorobenzene	42.2		1	
702	9/1/88	536A-0702-SB03	6.0-6.5	Chlorobenzene	1.4		1	
703	9/1/88	536A-0703-SB02	1.5-2.0	Chlorobenzene	1.1		1	
801	9/1/88	536A-0801-SB02	1.5-2.0	Chlorobenzene	5.0		1	
				Tetrachloroethene	2.6		1	
901	9/1/88	536A-0901-SB02	1.5-2.0	Chlorobenzene	1.3		1	
1502	6/24/87	536A-1502-SB01	6.0-7.0	1,2-Dichloroethene (total)	244.0	X	1, 50	Note (b)
				Tetrachloroethene	471.0	X	1	
				Trichloroethene	154.0	X	1	
	6/24/87	536A-1502-SB02	11.0-11.5	Tetrachloroethene	34.9	X	1	
				Trichloroethene	16.1	X	1	
1503	6/24/87	536A-1503-SB01	8.5-9.0	1,2-Dichloroethene (total)	566.0	X	1, 50	Note (b)
				Chlorobenzene	2.0		1	
				Methylene Chloride	42.3	X	1	
				Tetrachloroethene	75.4	X	1	
				Trichloroethene	15.1	X	1	
A1	8/1/85	A1-44182	0.5-2.5	Chloroform	280.0		1	Note (c)
				Tetrachloroethene	1900.0		1	
A2	8/1/85	A2-44181	0.5-2.5	Chloroform	310.0		1	Note (c)
				Tetrachloroethene	17.0		1	
A3	8/1/85	A3-44180	0.5-2.5	Chloroform	280.0		1	Note (c)
A5	8/1/85	A5-44122	2.0-2.5	Chloroform	270.0		1	Note (c)
A6	8/1/85	A6-44123	2.0-3.5	Chloroform	240.0		1	Note (c)
A8	8/1/85	A8-44184	2.0-3.5	Tetrachloroethene	610.0		1	
A9	8/1/85	A9-44185	1.0-2.5	Tetrachloroethene	582.0		1	

TABLE III

VOLATILE ORGANIC COMPOUNDS EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	Impact to Groundwater Soil Cleanup Criteria* (mg/kg)	Comments
A10	8/1/85	A10-44118	1.5-2.0	Chloroform	270.0	1	Note (c)
				Tetrachloroethene	68.0	1	
				Trichloroethene	23.0	1	
	8/1/85	A10-44119	3.5-4.0	Chloroform	330.0	1	Note (c)
				Methylene Chloride	18.0	1	
				Tetrachloroethene	26.0	1	
A11	8/1/85	A11-44120	1.5-2.0	Chloroform	200.0	1	Note (c)
				Tetrachloroethene	104.0	1	
				Trichloroethene	25.0	1	
	8/1/85	A11-44121	3.5-4.0	Chloroform	320.0	1	Note (c)
				Tetrachloroethene	390.0	1	
				Trichloroethene	129.0	1	
A12	8/1/85	A12-44109	2.0-4.0	Tetrachloroethene	72.9	1	
A13	8/1/85	A13-44110	2.0-4.0	Tetrachloroethene	17.2	1	
				Trichloroethene	3.0	1	
A14	8/1/85	A14-44111	2.0-4.0	Chloroform	280.0	1	Note (c)
				Methylene Chloride	25.0	1	
				Tetrachloroethene	31.0	1	
A15	8/1/85	A15-44401	6.0-8.0	Chloroform	350.0	1	Note (c)
B1	8/1/85	B1-44116	1.5-2.0	1,1,2,2-Tetrachloroethane	380.0	1	
				Chloroform	320.0	1	Note (c)
				Methylene Chloride	180.0	1	
				Tetrachloroethene	430.0	1	
				Trichloroethene	54.0	1	
B2	8/1/85	B2-44183	2.5-5.0	Chloroform	280.0	1	Note (c)
				Tetrachloroethene	1700.0	1	
B3	8/1/85	B3-44117	1.5-2.0	Chloroform	277.0	1	Note (c)
				Methylene Chloride	8.0	1	
				Tetrachloroethene	878.0	1	
C3	8/1/85	C3-44188	1.0-2.0	Chlorobenzene	80.0	1	
				Methylene Chloride	270.0	1	

TABLE III

VOLATILE ORGANIC COMPOUNDS EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	Impact to Groundwater Soil Cleanup Criteria* (mg/kg)	Comments
C-6	6/1/85	C-6-40332	1.5-2.0	Tetrachloroethene	50.0	1	
				Trichloroethene	19.0	1	
C-8	6/1/85	C-8-40324	3.5-4.0	Tetrachloroethene	33.1	1	
				Trichloroethene	15.5	1	
F1	8/1/85	F1-44403	1.0-1.0	Chloroform	320.0	1	Note (c)
F2	8/1/85	F2-44404	1.0-1.0	Chloroform	230.0	1	Note (c)
				Methylene Chloride	20.0	1	
F3	8/1/85	F3-44405	1.0-1.0	Chloroform	255.0	1	Note (c)
G1	8/1/85	G1-44112	0-2.0	Chloroform	300.0	1	Note (c)
G2	8/1/85	G2-44113	2.0-3.0	Chloroform	260.0	1	Note (c)
G3	8/1/85	G3-44114	2.0-3.0	Chloroform	218.0	1	Note (c)
				Methylene Chloride	13.0	1	
G4	8/1/85	G4-44115	0-2.0	Chloroform	233.0	1	Note (c)
HS-1	11/1/90	HS-1 #007	13.0-15.0	Chlorobenzene	1.3	1	
HS-2	11/1/90	HS-2 #004	5.0-7.0	Methylene Chloride	4.7	1	
HS-3	11/1/90	HS-3 #004	7.0-9.0	Methylene Chloride	3.6	1	
HS-6	11/1/90	HS-6 #006	13.0-15.0	1,2-Dichloroethane	1.0	1	
				Chlorobenzene	7.2	1	
				Methylene Chloride	1.9	1	
HS-8	11/1/90	HS-8 #003	6.0-8.0	Methylene Chloride	7.5	1	
HS-9	11/1/90	HS-9 #004B	8.5-9.0	Methylene Chloride	12.7	1	
HS-10	11/1/90	HS-10 #003	5.0-7.0	Methylene Chloride	7.5	1	
BR-UST-B	6/1/91	BR TANK BOTTOM	10.0-10.0	1,1,2,2-Tetrachloroethane	2.5	1	
				Chlorobenzene	6.4	1	
				Methylene Chloride	5.0	1	
BR-UST-W	6/1/91	BR TANK WEST	5.0-5.0	1,1,2,2-Tetrachloroethane	19.4	1	
				Methylene Chloride	4.5	1	
				Tetrachloroethene	8.3	1	

TABLE III

VOLATILE ORGANIC COMPOUNDS EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	Impact to Groundwater Soil Cleanup Criteria* (mg/kg)	Comments
BR-UST-E	6/1/91	BR TANK EAST	5.0-5.0	1,1,2,2-Tetrachloroethane	6.0	1	
				1,1,2-Trichloroethane	1.6	1	
				Methylene Chloride	5.1	1	
				Tetrachloroethene	156.3	1	
				Trichloroethene	30.8	1	
BR-UST-N	6/1/91	BR TANK NORTH	5.0-5.0	1,1,2,2-Tetrachloroethane	3.4	1	
				Methylene Chloride	3.9	1	
				Tetrachloroethene	1.3	1	
BR-UST-S	6/1/91	BR TANK SOUTH	5.0-5.0	Methylene Chloride	1.4	1	
				Tetrachloroethene	3.2	1	
GAS-UST-B	6/1/91	REAR TANK BOTTOM	6.0-6.0	1,1,2,2-Tetrachloroethane	1.3	1	
				Chlorobenzene	60.0	1	
				Methylene Chloride	7.8	1	
				Tetrachloroethene	57.4	1	
				Toluene	1343.1	500	
				Trichloroethene	11.2	1	
				Xylene (total)	100.7	67	
GAS-UST-E	6/1/91	REAR TANK EAST	3.0-4.0	Methylene Chloride	3.9	1	
GAS-UST-N	6/1/91	REAR TANK NORTH	5.0-5.0	Methylene Chloride	3.9	1	
GAS-UST-S	6/1/91	REAR TANK SOUTH	5.0-5.0	1,1,2,2-Tetrachloroethane	1.3	1	
				Methylene Chloride	3.5	1	
GAS-UST-W	6/1/91	REAR TANK WEST	3.0-4.0	Methylene Chloride	4.0	1	

Notes:

*: Soil Cleanup Criteria (last revised- 5/3/99). The IGWSCC is the most stringent criteria for the Volatile Organic parameters.

(a): The sample was diluted and reanalyzed due to high concentration of a compound. The results in parentheses are from the diluted sample.

(b): Cleanup Criterion not available for 1,2-dichloroethene (total); 1 mg/kg is the criterion for cis-1,2-dichloroethene and 50 mg/kg is the criterion for trans-1,2-dichloroethene.

(c): Presence of chloroform was attributed to laboratory contamination or error.

J Indicates reported value is below the method detection limit.

X Indicates the sample was analyzed at a higher dilution.

U Not Detected

DATA QUALIFYING NOTES FOR TABLES IV and V

GWQS	= Ground Water Quality Standards; N.J.A.C. 7:9-6.
170	Bold and shaded cell indicates that the concentration exceeds the GWQS for that compound.
(170)	The value in parentheses indicate concentration from a diluted or a duplicate sample.
*	= The given concentration is a total of 1,2 and 1,4-Dichlorobenzenes.
^	= The given concentration is a total of cis- and trans-1,2-Dichloroethenes.
--	= Not Detected at the Method Detection Limit.
NT	= Not Tested
J	= Estimated Concentration
B	= Compound was also detected in the Method Blank.
**	= GWQS not available for this compound; the criteria listed is the interim generic criteria for synthetic organic chemicals lacking evidence of carcinogenicity.
***	= Includes the total of concentrations for all the detected targeted compounds.
~	= New Maximum Concentration Limits (MCLs) in accordance with the revision to Safe Drinking Water Act (New Jersey Register: November 18, 1996). NJDEP memorandum dated February 5, 1997 defines these MCLs as the interim specific criteria replacing the promulgated GWQS for these compounds.

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-2				MW-4			MW-6		
	(ug/L)	1988	1993	1995	1998	1988	1993	1998	1988	1993	1998
1,1,1-Trichloroethane	30	--	--	--	--	3900	1600	3700	3200	130	190
1,1,2,2-Tetrachloroethane	1~	5 J	--	--	--	790 J	--	--	--	--	--
1,1,2-Trichloroethane	3	50	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	--	--	--	--	--	330	--	--	15	--
1,1-Dichloroethene	2	--	--	--	--	--	55	--	--	--	--
1,2-Dichloroethane	2	--	--	--	--	2900	590	--	110000	1900	1000
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	--	1.8	NT	--	--	1000	--	660	59	--
1,3-Dichlorobenzene	600	--	--	NT	--	--	32	--	--	--	--
1,4-Dichlorobenzene	75	--	1.6	NT	--	--	110	--	48 J	--	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	1700	--
Benzene	1	--	--	--	--	--	19	--	--	--	1100
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	50~	1.4 J	4.3	--	--	9000	560	--	--	6900	7800
Chloroethane	100**	--	--	--	--	--	--	--	27000	19	--
Chloroform	6	7	--	--	--	--	--	--	1200	24	18
Ethylbenzene	700	--	--	--	--	--	24	--	--	30	28
Methylene Chloride	3~	83 B,D	--	--	--	200000 B,D	11000	4300	74000 B	900	360
Tetrachloroethene	1	280	9	11	12	53000	1700	--	13000	600	710
Toluene	1000	--	--	--	--	3200	180	--	4700	250	160
cis- 1,2-Dichloroethene	70~	--	28	9.6	3.3	--	160	190000	--	73	57
trans- 1,2-Dichloroethene	100	530	--	--	--	12000	40	--	--	--	--
Trichloroethene	1	72	1.9	4 J	3.1	18000	1800	--	6500	280	460
Vinyl Chloride	5	34	--	--	--	--	--	--	--	30	--
Xylene (Total)	1000~	NT	--	--	--	NT	240	--	NT	45	--
MTBE	70~	NT	NT	NT	--	NT	NT	--	NT	NT	--
Total Targeted Volatile Organics (ug/L)***		1062.4	46.6	24.6	18.4	302790	19440	198000	240308	12955	11883

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-8			MW-10				MW-12			MW-14	
	(ug/L)	1988	1993	1998	1988	1993	1995	1998	1988	1993	1998	1988	1998
1,1,1-Trichloroethane	30	**570** J	**390**	--	--	--	--	--	7.5	**38**	16	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	**640** J	**160**	--	--	--	--	--	1.6 J	5	3.6	--	1.2
1,1-Dichloroethene	2	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	2	**5400**	--	--	--	**76**	--	--	--	--	--	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	220	**5500**	**1500**	22	--	NT	--	--	--	--	--	--
1,3-Dichlorobenzene	600	--	--	--	--	--	NT	--	--	--	--	--	--
1,4-Dichlorobenzene	75	**250**	**390**	--	19	--	NT	--	--	--	--	--	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1	**1300**	**3600**	**2600**	**980**	**590**	**660**	**1500**	--	--	--	--	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	2 J	--	--	--	--
Chlorobenzene	50~	**80000**	**69000**	**23000**	**8300**	**7000**	**5500**	**4700**	1 J	--	--	--	4.5
Chloroethane	100**	--	--	--	--	--	--	**120**	--	--	--	--	--
Chloroform	6	**200** J	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	700	--	340	280	22 J	--	--	--	--	--	--	--	--
Methylene Chloride	3~	**14000** B,D	--	--	**410** B,D	--	--	--	**20** B	--	--	**10** B	--
Tetrachloroethene	1	**3600**	**8200**	**2000**	--	--	--	--	--	--	--	--	--
Toluene	1000	**11000**	**5400**	680	--	--	--	--	--	--	--	--	--
cis- 1,2-Dichloroethene	70~	--	**1300**	**1100**	--	--	--	--	--	--	--	--	4.4
trans- 1,2-Dichloroethene	100	**13000**	--	--	18 J	--	--	--	--	--	--	--	0.3
Trichloroethene	1	**850** J	**1300**	**160**	**16** J	--	--	--	--	--	--	--	--
Vinyl Chloride	5	--	**490**	--	--	--	--	--	--	--	--	--	**16**
Xylene (Total)	1000~	NT	310	--	NT	--	--	--	NT	--	--	NT	--
MTBE	70~	NT	NT	--	NT	NT	NT	--	NT	NT	--	NT	1.8
Total Targeted Volatile Organics (ug/L)***		131030	96380	31320	9787	7666	6160	6320	32.1	43	19.6	10	28.2

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS (ug/L)	MW-16				MW-17			MW-18			MW-20		
		1988	1993	1995	1998	1989	1993	1998	1988	1993	1995	1990	1993	1998
1,1,1-Trichloroethane	30	--	--	--	--	--	1700	3600	--	--	--	5 J	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	6.7	6	4.3	2.4	1200	250	1000	150	71	--	--	--	--
1,1-Dichloroethene	2	--	--	--	--	690	120	--	--	--	--	--	--	--
1,2-Dichloroethane	2	--	--	--	--	2100	450	--	280	820	--	--	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	2.2 J	2.5	NT	--	21000 *	1200	--	--	880	NT	3 J	--	--
1,3-Dichlorobenzene	600	--	--	NT	--	310	100	--	--	27	NT	--	--	--
1,4-Dichlorobenzene	75	--	--	NT	--		170	--	--	940	NT	--	--	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1	4.7 J	3.7	3.4	2	--	15	--	350	280	--	--	--	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	50~	110	63	57	54	2300	240	--	2600	7100	4300	--	--	--
Chloroethane	100**	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	6	4 J	--	--	--	--	--	--	--	--	--	4 J	--	0.3
Ethylbenzene	700	3 J	3.6	2.6	1.7	420	15	--	53	110	--	--	--	--
Methylene Chloride	3~	12 B	--	--	--	610000	5800	4300	18000 B,D	--	--	16.9	--	--
Tetrachloroethene	1	4 J	--	--	--	26000	2600	3100	5.1	--	--	119	--	0.6
Toluene	1000	180	10	7.9	2.5	7900	360	--	240	160	--	--	1.2	--
cis- 1,2-Dichloroethene	70~	--	32	19	18	96000 ^	35000	230000	--	42000	210000	NT	--	0.5 J
trans- 1,2-Dichloroethene	100	120	1.3	1.4	0.9		61	--	710	80	--	5.2	--	--
Trichloroethene	1	5.6	--	--	--	77000	3800	2200	--	23	--	16.7	--	1.2
Vinyl Chloride	5	57	45	10	5.6	--	--	--	16000	28000	6000	--	--	--
Xylene (Total)	1000~	NT	3	3.1	0.7 J	NT	140	--	NT	290	--	--	--	--
MTBE	70~	NT	NT	NT	--	NT	NT	--	NT	NT	NT	NT	NT	1
Total Targeted Volatile Organics (ug/L)***		509.2	170.1	108.7	87.8	844920	52021	244200	38388.1	80781	220300	169.8	1.2	3.6

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-21			MW-22		MW-23			MW-24			
	(ug/L)	1990	1993	1998	1993	1998	1990	1995	1998	1990	1993	1995	1998
1,1,1-Trichloroethane	30	--	--	--	**2000**	20	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	27	21	50	**860**	6.8	--	--	0.6	--	--	--	--
1,1-Dichloroethene	2	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	2	--	--	--	**670**	--	--	--	--	--	0.78	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	117	40	--	**2100**	--	95 J	NT	10	--	--	NT	--
1,3-Dichlorobenzene	600	31	56	--	--	--	397 J	NT	--	--	--	NT	--
1,4-Dichlorobenzene	75	**102**	**200**	**150**	**190**	--	--	NT	--	--	--	NT	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1	**14**	**24**	**31**	--	--	--	**35**	0.9	--	--	--	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	50~	**827**	**2400**	**3700**	**760**	4.2	**55** J	**81**	14	--	1.4	1.8 J	1
Chloroethane	100**	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	6	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	700	--	--	--	240	--	--	--	1.7	--	--	--	--
Methylene Chloride	3~	**98**	--	--	**270000**	--	--	--	--	**4** J	--	**3.2** J	--
Tetrachloroethene	1	**3**	--	--	**1200**	**3.4**	--	--	--	--	--	--	--
Toluene	1000	9	14	--	**3100**	--	--	96	7.8	--	--	--	--
cis- 1,2-Dichloroethene	70~	NT	**1900**	**8300**	**120000**	**1000**	--	**19000**	8.8	NT	--	--	--
trans- 1,2-Dichloroethene	100	--	--	47	--	--	**2285**	--	0.4	--	--	--	--
Trichloroethene	1	**4**	--	--	**3400**	--	--	--	--	--	--	--	--
Vinyl Chloride	5	--	**670**	**1100**	--	--	**1229**	**5200**	**5.8**	--	--	--	--
Xylene (Total)	1000~	14	30	--	700	--	121 J	100	16	--	--	--	--
MTBE	70~	NT	NT	--	NT	--	NT	NT	--	NT	NT	NT	--
Total Targeted Volatile Organics (ug/L)***		1246	5355	13378	405220	1034.4	4682	24512	66	4	2.18	5	1

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-25		MW-26		MW-27		MW-28			MW-29
	(ug/L)	1990	1993	1990	1998	1990	1998	1990	1993	1998	1995
1,1,1-Trichloroethane	30	--	--	3169	21000	2474 J	1400	7 J	--	--	23
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	3824 J	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	--	--	--	3500	--	950	44 J	--	--	48
1,1-Dichloroethene	2	--	--	113 J	--	--	--	--	--	--	--
1,2-Dichloroethane	2	--	--	11990	130000	--	--	--	--	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	9 J	--	3098	--	7613 J	--	10 J	--	--	--
1,3-Dichlorobenzene	600	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	75	11.6	--	--	--	--	--	--	--	--	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	--	--
Benzene	1	933	600	1741	--	--	--	24 J	140	140	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	344	--	--	--	--	--	--	--
Chlorobenzene	50	2159	2000	15700	230000	14980	4700	418	1700	1300	--
Chloroethane	100**	--	--	--	--	--	--	--	--	--	--
Chloroform	6	--	--	1110	18000	--	--	--	--	--	--
Ethylbenzene	700	8 J	--	--	--	--	--	--	--	--	--
Methylene Chloride	3~	8 J	--	106900	150000	126000	22000	8 J	--	--	--
Tetrachloroethene	1	6 J	--	3020	54000	219400	460	--	--	--	36
Toluene	1000	--	--	--	8000	--	3500	--	--	--	--
cis- 1,2-Dichloroethene	70~	NT	--	NT	5300	NT	460000	NT	--	--	2300
trans- 1,2-Dichloroethene	100	19 J	--	122 J	--	78850	--	17 J	--	--	--
Trichloroethene	1	--	--	999	2200	135800	--	--	--	--	--
Vinyl Chloride	5	--	--	--	1300	--	--	--	--	6	1100
Xylene (Total)	1000~	--	--	--	--	5201 J	--	--	--	--	--
MTBE	70~	NT	NT	NT	--	NT	--	NT	NT	--	
Total Targeted Volatile Organics (ug/L)***		3153.6	2600	148306	623300	594142	493010	528	1840	1446	3507

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-30	MW-31		MW-32	MW-33		CW-1		CW-2	CW-3	
	(ug/L)	1995	1993	1995	1992	1992	1998	1992	1993	1990	1990	1993
1,1,1-Trichloroethane	30	--	--	--	--	--	6.3	25.6	23	--	**1280**	**1200**
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	--	42	--	--	--	2.4	**70**	**396**	--	**525**	**460**
1,1-Dichloroethene	2	--	**7.1**	--	--	--	1.2	--	0.87	--	**454**	--
1,2-Dichloroethane	2	--	--	--	--	--	--	--	0.99	**129.4**	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	--	59	NT	94 J	--	--	8.5	65	40 J	**6581**	**5300**
1,3-Dichlorobenzene	600	--	9.6	NT	94 J	--	--	8.5	4.6	40 J	157	110
1,4-Dichlorobenzene	75	--	32	NT	**273** J	--	--	--	8.1	**380**	**3333**	**380**
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	5.4	--	--	--	--
Benzene	1	**140**	**32**	**30**	--	--	--	--	--	--	**23**	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	**88**	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	**198**	--
Chlorobenzene	50~	**140**	**100**	48	**188** J	--	5.8	--	17	46 J	**2310**	**2200**
Chloroethane	100**	--	--	--	--	--	--	--	--	--	--	--
Chloroform	6	--	--	**49**	--	**14.5**	**22**	--	--	--	**24**	--
Ethylbenzene	700	--	1.3	7.2	--	--	--	--	5.5	--	324	--
Methylene Chloride	3~	--	--	--	**10040** B	3 J	--	--	--	**21** JB	**14200**	**5600**
Tetrachloroethene	1	--	--	**13**	--	--	--	**46.1**	**79**	--	**5650**	**2900**
Toluene	1000	--	13	22	175 J	--	--	--	3.2	24 J	**1575**	510
cis- 1,2-Dichloroethene	70~	**12000**	1.3	**1800**	--	--	**80**	--	**800**	--	NT	**80000**
trans- 1,2-Dichloroethene	100	--	60	--	**292**	--	1.2	--	6.1	--	**107**	--
Trichloroethene	1	--	--	--	**201** J	--	**1.2**	**33.5**	**29**	**40** J	**4395**	**1200**
Vinyl Chloride	5	**2300**	**34000**	**1200**	--	--	1.6	--	**13**	--	--	--
Xylene (Total)	1000~	--	81	37	--	--	--	--	36	--	815	690
MTBE	70~					NT	4.8					
Total Targeted Volatile Organics (ug/L)***		14580	34438.3	3206.2	11357	17.5	126.5	197.6	1487.4	720.4	42039	100550

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	CW-5	CW-6	CW-7	CW-9	CW-10		CW-11		CW-12	CW-14
	(ug/L)	1993	1995	1995	1993	1992	1993	1990	1993	1995	1995
1,1,1-Trichloroethane	30	**9500**	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	**56.4**	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	**1200**	--	--	--	--	1.6	**575**	**230**	--	--
1,1-Dichloroethene	2	--	--	--	--	--	--	**18**	--	--	--
1,2-Dichloroethane	2	**1500**	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	**5600**	--	--	57	--	16	**725**	570	--	470
1,3-Dichlorobenzene	600	--	--	--	--	--	1.5	25	--	--	100
1,4-Dichlorobenzene	75	**740**	--	--	--	--	5.8	**113**	**120**	--	**200**
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	--	--	--	--	--
Benzene	1	--	--	--	**1600**	--	**78**	**2390**	**960**	**1800** J	**2400**
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	50	**3900**	--	**370**	**5200**	**880.5** D	**1800**	**2965**	**52000**	**140000**	**17000**
Chloroethane	100**	--	--	--	--	--	--	**175**	--	--	21
Chloroform	6	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	700	--	--	91	--	--	3.7	449	610	--	62
Methylene Chloride	3~	**500000**	**620000**	--	--	--	**13**	**2315**	--	--	--
Tetrachloroethene	1	**39000**	**4400** J	--	--	**59** J	**2.1**	**910**	--	**12000**	--
Toluene	1000	**7100**	**5700**	160	--	--	11	--	**6500**	**5700**	160
cis- 1,2-Dichloroethene	70~	**160000**	**56000**	--	**1200**	--	29	NT	**6900**	**8100**	--
trans- 1,2-Dichloroethene	100	--	--	--	--	--	--	--	--	--	--
Trichloroethene	1	**81000**	**16000**	--	--	--	**7.6**	**240**	--	**5200**	--
Vinyl Chloride	5	--	--	--	--	--	--	**6700**	**5500**	--	--
Xylene (Total)	1000~	**2500**	--	160	--	--	4.2	122	200	--	43
Total Targeted Volatile Organics (ug/L)***		812040	702100	781	8057	939.5	1973.5	17778.4	73590	172800	20456

Refer to data qualifying notes provided for TABLES IV and V

TABLE IV
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	CW-15	CW-19	CW-21	RW6-1	RW6-2		RW6-3	RW7-8
	(ug/L)	1995	1995	1995	1990	1990	1993	1990	1995
1,1,1-Trichloroethane	30	290	--	--	773	1741	--	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	132 J	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	330	10	--	400	2686	1100	--	--
1,1-Dichloroethene	2	--	--	--	117 J	--	--	--	--
1,2-Dichloroethane	2	--	--	--	77340	188800	180000	--	--
1,2-Dichloropropane	1	--	--	--	2757	806	--	--	--
1,2-Dichlorobenzene	600	4600	190	140	27980	2157	2500	28220	--
1,3-Dichlorobenzene	600	--	35	--	1899	--	--	590	--
1,4-Dichlorobenzene	75	310	170	180	873	--	--	--	--
2-Chloroethyl Vinyl Ether	100**	--	--	--	--	--	14000	--	--
Benzene	1	340	1400	1200	469	938	--	392 J	800
Bromodichloromethane	1	--	--	--	--	--	--	--	--
Carbon Tetrachloride~	2	--	--	--	--	--	--	--	--
Chlorobenzene	50~	76000	16000	11000	27980	123300	110000	118300	8500
Chloroethane	100**	--	--	--	--	--	--	--	--
Chloroform	6	--	--	--	2543	8452	2500	--	--
Ethylbenzene	700	1400	10	--	873	1219	110	--	--
Methylene Chloride	3~	--	--	--	17400	160700	250000	31160	1800
Tetrachloroethene	1	11000	--	--	2728	11480	5400	52080	--
Toluene	1000	8100	210	370	1899	12859	1900	--	180 J
cis- 1,2-Dichloroethene	70~	22000	260	6400	--	NT	--	--	290
trans- 1,2-Dichloroethene	100	--	--	--	138 J	941	--	13640	--
Trichloroethene	1	3100	--	--	202	7302	10000	5641	--
Vinyl Chloride	5	--	--	--	226 J	--	--	--	150 J
Xylene (Total)	1000~	--	14	--	--	--	--	--	--
Total Targeted Volatile Organics (ug/L)***		127470	18299	19290	166597	513513	577510	250023	11720

Refer to data qualifying notes provided for TABLES IV and V

TABLE V
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (DEEP WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-1				MW-3			MW-5			MW-7		
	(ug/L)	1988	1993	1995	1998	1988	1993	1998	1988	1993	1998	1988	1993	1998
1,1,1-Trichloroethane	30	--	--	--	--	3 J	1.3	4.5	2 J	--	--	3 J	1.6	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	50~	31	--	--	--	--	--	2.7	48	5.5	14	--	--	--
1,1-Dichloroethene	2	--	--	--	--	--	--	--	--	--	1.3	--	--	--
1,2-Dichloroethane	2	**34**	--	--	--	--	1.7	--	**3** J	--	**3.9**	**15**	**22**	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	--	58	NT	--	--	180	**900**	--	7.1	64	6 J	9.4	--
1,3-Dichlorobenzene	600	--	--	NT	--	--	6.4	18	--	1	--	56	--	--
1,4-Dichlorobenzene	75	--	7.4	NT	--	--	15	69	--	2.5	18	--	--	--
2-Chloroethyl Vinyl Ether	100	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1	--	--	--	--	**7** J	--	**5.3**	**10**	**1.8**	**3.3**	--	--	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--	**5.9**	--	--
Carbon Tetrachloride	2	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	50~	**120**	19	8.6 J	--	**320**	**72**	**280**	**61**	20	**91**	--	**53**	3.8
Chloroethane	100	--	--	--	--	--	--	--	7.2 J	--	--	--	--	--
Chloroform	6	**13** J	--	--	--	**8.9** J	--	--	--	--	--	**70**	--	2.8
Ethylbenzene	700	18 J	--	--	--	--	--	1.6	5.8	--	0.4	--	--	--
Methylene Chloride	3~	**890** D	--	--	--	**73** B	--	--	**50** B	**8.3**	--	**19** B	**5.6**	--
Tetrachloroethene	1	**63**	--	--	--	--	**25**	**17**	**2.8** J	--	**2.1**	**7.3**	**19**	**3.8**
Toluene	1000	140	34	12	--	4.4 J	--	--	29	--	5	2 J	2.9	--
cis- 1,2-Dichloroethene	70~	--	**1300**	**700**	**1700**	--	**380**	**480**	--	**81**	**170**	--	7	9.1
trans- 1,2-Dichloroethene	100	**5500**	--	--	--	**430**	3.3	9.1	**180**	--	3.9	5.5	--	--
Trichloroethene	1	**16** J	--	**8.5** J	--	--	**11**	**5.8**	**4.3** J	--	**9.4**	**11**	**7.7**	**10**
Vinyl Chloride	5	**480**	--	**74**	**49**	**58**	**23**	**100**	**200**	**69**	**65**	--	--	--
Xylene (Total)	1000~	NT	36	--	--	NT	--	--	NT	--	1.3	NT	--	--
MTBE	70~	NT	NT	NT	--	NT	NT	--	NT	NT	4	NT	NT	--
Total Targeted Volatile Organics (ug/L)		7305	1454.4	803.1	1749	904.3	718.7	1893	603.1	196.2	456.6	200.7	128.2	29.5

Refer to data qualifying notes provided for TABLES IV and V

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VO Deep
November 1999

TABLE V
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER (DEEP WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	GWQS	MW-9			MW-11			MW-13			MW-15		MW-19	
	(ug/L)	1988	1993	1998	1988	1993	1998	1988	1993	1998	1988	1998	1989	1998
1,1,1-Trichloroethane	30	--	--	--	2 J	--	--	5 J	--	--	6.8	--	--	--
1,1,2,2-Tetrachloroethane	1~	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	3	--	--	--	--	--	--	**35** J	--	--	--	--	--	--
1,1-Dichloroethane	50~	--	--	--	2 J	--	--	2 J	--	--	--	--	--	--
1,1-Dichloroethene	2	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	2	2 J	2	--	--	1.8	--	--	--	--	--	--	--	--
1,2-Dichloropropane	1	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	600	6 J	6.6	--	--	2.8	--	12 J	--	--	--	--	--	--
1,3-Dichlorobenzene	600	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	75	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloroethyl Vinyl Ether	100	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1	--	--	--	**2** J	--	--	--	--	--	--	--	--	--
Bromodichloromethane	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	2	--	--	--	--	--	**6.7**	--	--	--	--	**5.1**	--	0.7
Chlorobenzene	50~	--	25	14	29	12	7.5	--	--	--	4.3 J	0.6	--	0.3
Chloroethane	100	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	6	3 J	--	0.7	--	--	1.3	1.1 J	1.1	5.3	--	3	--	0.9
Ethylbenzene	700	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride	3~	**12** JB	--	--	**12** JB	--	--	**19**	--	--	**3.7** JB	--	--	--
Tetrachloroethene	1	**9**	**9.1**	**4.4**	--	**3.1**	0.5	**4** J	**2.6**	**3.9**	--	**1.2**	**4** J	**3.3**
Toluene	1000	--	1.5	--	--	--	--	--	--	--	--	--	--	--
cis- 1,2-Dichloroethene	70~	--	15	7.7	--	9	5.2	--	15	8.3	--	2.2	11 ^	4.8
trans- 1,2-Dichloroethene	100	5.1	--	--	13	--	--	15	--	--	1.4 J	--	--	0.4
Trichloroethene	1	**12**	**11**	**19**	**6.1**	**2.1**	**7.4**	**50**	**5.7**	**5.9**	**8.5**	**15**	**43**	**32**
Vinyl Chloride	5	--	--	--	--	--	--	--	1.5	--	--	--	--	--
Xylene (Total)	1000~	NT	--	--	NT	--	--	NT	--	--	--	--	NT	--
MTBE	70~	NT	NT	--	NT	NT	--	NT	NT	--	NT	--	NT	0.8 J
Total Targeted Volatile Organics (ug/L)		49.1	70.2	45.8	66.1	30.8	28.6	143.1	25.9	23.4	24.7	27.1	58	43.2

Refer to data qualifying notes provided for TABLES IV and V

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	HA-1		HA-2			HA-3			HA-4		HA-5		
Sample Depth (feet)	0.1-0.6	4.0-4.5	1.0-1.5	2.0-2.5	5.5-6.0	1.5-2.0	6.5-7.0	9.0-9.5	2.0-2.5	6.0-6.5	1.0-1.5	5.0-5.5	7.0-7.5
Lab Sample Number	75089	75088	75091	75093	75092	75083	75099	75100	75086	75087	75098	75097	75095
Sampling Date	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98
PESTICIDES/PCBs													
Aroclor-1242	--	--	--	0.92	0.28 (0.49)	1.4	3.8	0.86	1	0.53	-- (--)	--	0.51
Aroclor-1248	--	0.14	0.9	--	-- (--)	--	--	--	--	--	0.26 (0.3)	1.2	--
Aroclor-1254	--	--	--	--	-- (--)	--	--	--	--	--	0.13 (0.15) P*	--	--
Aroclor-1260	--	--	--	--	-- (--)	--	--	--	--	--	-- (--)	--	--

Sample ID	HA-6			HA-7			HA-8		HA-9		HA-10		
Sample Depth (feet)	2.5-3.0	9.0-9.5	11.5-12.0	1.5-2.0	9.0-9.5	13.0-13.5	2.5-3.0	13.0-13.5	10.0-10.5	14.5-15.0	1.5-2.0	9.0-9.5	11.0-11.5
Lab Sample Number	74500	74498	74499	74505	74503	74504	74502	74501	74510	74509	74506	74508	74507
Sampling Date	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98
PESTICIDES/PCBs													
Aroclor-1242	--	20	0.14	1200	1200	49	--	22	5	50	33	0.37	0.11
Aroclor-1248	0.48	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-11		HA-12			HA-13			HA-14			HA-15	
Sample Depth (feet)	0.0-0.5	5.5-6.0	0.0-0.5	2.5-3.0	6.0-6.5	0.0-0.5	2.8-3.3	13.0-13.5	0.8-1.3	8.0-8.5	15.5-16.0	8.0-8.5	12.5-13.
Lab Sample Number	75094	75076	75077	75078	75080	75081	75082	75084	75072	75079	75085	75071	75073
Sampling Date	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98
PESTICIDES/PCBs													
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	0.099	--	--	34	--	--	3.8	1.3	2.1	510	1.9	0.095
Aroclor-1248	0.38	--	0.98	--	--	110	0.25	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	0.18	--	0.2	--	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	HA-1		HA-2			HA-3			HA-4		HA-5		
Sample Depth (feet)	0.1-0.6	4.0-4.5	1.0-1.5	2.0-2.5	5.5-6.0	1.5-2.0	6.5-7.0	9.0-9.5	2.0-2.5	6.0-6.5	1.0-1.5	5.0-5.5	7.0-7.5
Lab Sample Number	75089	75088	75091	75093	75092	75083	75099	75100	75086	75087	75098	75097	75095
Sampling Date	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98
PESTICIDES/PCBs													
Aroclor-1242	--	--	--	0.92	0.28 (0.49)	1.4	3.8	0.86	1	0.53	-- (--)	--	0.5*
Aroclor-1248	--	0.14	0.9	--	-- (--)	--	--	--	--	--	0.26 (--)	1.2	--
Aroclor-1254	--	--	--	--	-- (--)	--	--	--	--	--	13 (0.15) P*	--	--
Aroclor-1260	--	--	--	--	-- (--)	--	--	--	--	--	-- (--)	--	--

Sample ID	HA-6			HA-7			HA-8		HA-9		HA-10		
Sample Depth (feet)	2.5-3.0	9.0-9.5	11.5-12.0	1.5-2.0	9.0-9.5	13.0-13.5	2.5-3.0	13.0-13.5	10.0-10.5	14.5-15.0	1.5-2.0	9.0-9.5	11.0-11.5
Lab Sample Number	74500	74498	74499	74505	74503	74504	74502	74501	74510	74509	74506	74508	74507
Sampling Date	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98
PESTICIDES/PCBs													
Aroclor-1242	--	20	0.14	1200	1200	49	--	22	5	50	33	0.37	0.11
Aroclor-1248	0.48	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-11		HA-12			HA-13			HA-14			HA-15	
Sample Depth (feet)	0.0-0.5	5.5-6.0	0.0-0.5	2.5-3.0	6.0-6.5	0.0-0.5	2.8-3.3	13.0-13.5	0.8-1.3	8.0-8.5	15.5-16.0	8.0-8.5	12.5-13.0
Lab Sample Number	75094	75076	75077	75078	75080	75081	75082	75084	75072	75079	75085	75071	75073
Sampling Date	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98	07/30/98
PESTICIDES/PCBs													
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	0.099	--	--	34	--	--	3.8	1.3	2.1	510	1.9	0.095
Aroclor-1248	0.38	--	0.98	--	--	110	0.25	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	0.18	--	0.2	--	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	HA-16		HA-17			HA-18		HA-19		HA-20		HA-21	
Sample Depth (feet)	2.5-3.0	13.5-14.0	4.5-5.0	8.5-9.0	10.0-10.5	6.5-7.0	11.0-11.5	9.0-9.5	13.0-13.5	1.0-1.5	5.5-6.0	5.5-6.0	11.0-11.5
Lab Sample Number	75106	75105	75110	75111	75113	75112	75107	75103	75102	75074	75075	75104	75108
Sampling Date	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/30/98	07/30/98	07/31/98	07/31/98
PESTICIDES/PCBs													
Aroclor-1242	-- (--)	6.6	510	1800	67	0.11	81	0.78	74	0.38	0.73	0.17	0.62
Aroclor-1248	-- (--)	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	-- (--)	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	-- (--)	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-22		HA-23			HA-24		HA-25		HA-26		HA-27		
Sample Depth (feet)	1.0-1.5	8.0-8.5	2.5-3.0	8.0-8.5	10.8-11.3	8.5-9.0	11.0-11.5	7.5-8.0	11.3-11.8	10.5-11.0	17.5-18.0	2.5-3.0	8.5-9.0	12.0-12.5
Lab Sample Number	75114	75115	80912	80914	80913	80911	80915	80917	80916	80908	80909	80907	80902	80906
Sampling Date	07/31/98	07/31/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98
PESTICIDES/PCBs														
Aroclor-1242	--	0.41	0.34	--	--	--	--	--	--	--	--	0.6	--	0.12
Aroclor-1248	3.9	--	--	--	--	--	--	--	--	1.4	0.35	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-28			HA-29		HA-30		HA-31			HA-32		
Sample Depth (feet)	2.0-2.5	8.5-9.0	12.5-13.0	8.5-9.0	14.5-15.0	8.6-9.0	15.5-16.0	0-0.5'	2.5-3.0'	15.3-15.8'	0-0.5'	2.5-3.0'	14.5-15.0
Lab Sample Number	80901	80905	80898	80904	80910	80899	80900	151797	151798	151799	151800	151801	151802
Sampling Date	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/28/98	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99
PESTICIDES/PCBs													
Aroclor-1232	--	--	--	-- (--)	--	--	--	--	--	--	--	--	0.26
Aroclor-1242	--	--	--	-- (--)	--	--	--	--	--	9.5	--	--	--
Aroclor-1248	0.43	--	--	-- (--)	--	--	--	170	0.16	--	--	--	--
Aroclor-1254	--	--	--	-- (--)	--	--	--	--	--	--	--	--	--
Aroclor-1260	0.14	--	--	-- (--)	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	HA-33			HA-34			HA-35			HA-36		
Sample Depth (feet)	0-0.5'	2.5-3.0'	11.2-11.7'	0-0.5'	2.5-3.0'	9.0-9.5	0-0.5'	2.5-3.0'	10.0-10.5'	0-0.5'	2.5-3.0'	8.5-9.0'
Lab Sample Number	151803	151804	151805	151806	151807	151808	151809	151810	151811(12)	151813	151814	151815 (16)
Sampling Date	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99
PESTICIDES/PCBs												
Aroclor-1242	--	--	16	--	--	27	--	--	22 (19)	--	--	--
Aroclor-1248	4.5	--	--	21	--	--	300	0.39	--	2200	6.5	180 (560)
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-37			HA-38			HA-39			HA-40		
Sample Depth (feet)	0-0.5'	2.5-3.0'	14.5-15.0'	0-0.5'	2.5-3.0'	15.5-16.0'	0-0.5'	2.5-3.0'	11.5-12.0'	0-0.5'	2.5-3.0'	15.3-15.8'
Lab Sample Number	151817	151818	151819	151820	151821	151822	151823	151824	151825	151826	151827	151828
Sampling Date	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99
PESTICIDES/PCBs												
Aroclor-1242	--	--	0.55	--	--	14	--	--	7.5	--	--	--
Aroclor-1248	13,000	68	--	79	--	--	--	--	--	55	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	HA-41			HA-42			HA-43			HA-44		
Sample Depth (feet)	0-0.5'	2.5-3.0'	11.5-12.0'	0-0.5'	3.0-3.5'	4.0-4.5	0-0.5'	2.5-3.0'	8.0-8.5'	0-0.5'	2.5-3.0'	8.0-8.5'
Lab Sample Number	151829	151830	151831	151832	151833	151834	151835	151836	151837	151838	151839	151840
Sampling Date	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99
PESTICIDES/PCBs												
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	--	--	170	37	--	--	47	--	--	46
Aroclor-1248	--	--	--	--	--	--	150	0.36	--	740	82	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	HA-45			HA-46			PCB-1		PCB-2	PCB-3		PCB-4		PCB-5	
Sample Depth (feet)	0-0.5'	2.5-3.0'	14.0-14.5'	0-0.5'	2.5-3.0'	14.5-15.0'	0.0-0.5'	0.8-1.1'	0.0-0.4'	0.0-0.5'	1.5-2.0'	0.0-0.5'	1.5-2.0'	0.0-0.5'	1.2-1.5'
Lab Sample Number	151841	151842	151843	151844	1845 (47)	151846	75077	75078	75081	75072	75079	75077	75078	75081	75082
Sampling Date	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	8/19/99	6/17/99	6/17/99	6/17/99	6/17/99	6/17/99	6/17/99	6/17/99	6/17/99	6/17/99
PESTICIDES/PCBs															
Aroclor-1242	--	--	2.4	--	--	40	--	--	--	--	--	--	--	--	--
Aroclor-1248	100	0.11	--	0.091	-- (0.13)	--	500	48	7.4	(740) 740	16	6,000	380	26,000	80
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	PCB-6	PCB-7		102				103 (MW3)				
Sample Depth (feet)	0.0-0.5'	0.0-0.5'	1.0-1.2'	1.5-2.0'	4.5-5.0'	6.0-6.5'	6.5-7.0'	1.5-2.0'	4.5-5.0'	5.5-6.0'	7.0-7.5'	4.0-24.5'
Lab Sample Number	75077	75081	75082	102-SB02	102-SB03	102-SB04	02-SB05	103-SB02	103-SB03	103-SB04	03-SB05	103-SB06
Sampling Date	6/17/99	6/17/99	6/17/99	9/1/88	9/1/88	9/1/88	9/1/88	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88
PESTICIDES/PCBs												
Aroclor-1242	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1248	2200	500	150	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	0.26	--	--	--	--	--	--	--	--

Sample ID	104 (MW18)				105					106				
Sample Depth (feet)	1.5-2.0'	5.5-6.0'	6.0-6.5'	7.0-7.5'	1.5-2.0'	1.5-2.0'	4.0-4.5'	6.5-7.0'	7.5-8.0'	1.5-2.0'	1.5-2.0'	4.0-4.5'	6.0-6.5'	6.5-7.0'
Lab Sample Number	104-SB02	104-SB03	104-SB04	104-SB05	105-SB02	105-SB22	05-SB03	105-SB04	105-SB05	106-SB02	06-SB22	106-SB03	106-SB04	06-SB05
Sampling Date	8/1/88	8/1/88	8/1/88	8/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88
PESTICIDES/PCBs														
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1248	--	--	--	--	0.27	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	107			108			109			110			
Sample Depth (feet)	4.0-4.5'	6.0-6.5'	7.0-7.5'	4.0-4.5'	6.0-6.5'	7.0-7.5'	4.0-4.5'	6.0-6.5'	11.5-12.0'	1.5-2.0'	5.0-5.5'	7.0-7.5'	8.0-8.5'
Lab Sample Number	107-SB01	107-SB02	107-SB03	108-SB01	108-SB02	108-SB03	109-SB01	109-SB02	109-SB03	110-SB02	110-SB03	110-SB04	110-SB05
Sampling Date	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88	8/1/88	9/1/88	9/1/88	9/1/88	9/1/88
PESTICIDES/PCBs													
Aroclor-1242	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	113	507	508	601(MW7)	602	613	701		702		703		801
Sample Depth (feet)	4.0-5.0	6.0-7.0'	6.0-8.0'	1.5-2.0'	6.5-7.0'	5.0-6.0'	1.5-2.0'	5.5-6.0'	1.0-1.5'	6.0-6.5'	1.5-2.0'	6.0-6.5'	1.5-2.0'
Lab Sample Number	113-003	507-004	508-004	601-SB02	602-SB01	613-004	701-SB02	701-SB03	702-SB01	702-SB03	703-SB02	703-SB03	801-SB02
Sampling Date	4/20/92	4/20/92	4/20/92	7/1/88	12/1/88	4/20/92	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88
PESTICIDES/PCBs													
Aroclor-1242	2.16	--	--	--	13	2.14	--	--	--	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	0.68	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	901	1101	1302			1303	1401			1502		
Sample Depth (feet)	1.5-2.0'	1.5-2.0'	2.0-2.5'	2.5-4.0'	7.0-7.5'	1.5-2.0'	1.0-1.5'	1.5-2.0'	4.0-4.5'	6.0-7.0'	11.0-11.5'	13.5-14.0'
Lab Sample Number	901-SB02	901-SB03	1302-SB02	1302-SB03	302-SB04	303-SB02	1401-SB01	401-SB02	1401-SB03	1502-SB01	1502-SB02	1502-SB03
Sampling Date	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88	9/1/88
PESTICIDES/PCBs												
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	--	--	--	--	--	--	--	0.13	0.051	0.014
Aroclor-1248	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

TABLE VI
POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

All results are in parts per million (ppm)

Sample ID	1503		1504	1505	1506			A10	A11	A12	A13	A14	A15
Sample Depth (feet)	8.5-9.0'	11.5-12.0'	3.5-4.0'	4.0-4.5'	1.5-2.0'	4.5-5.0'	8.0-8.5'	3.5-4.0'	3.5-4.0'	2.0-4.0'	2.0-4.0'	2.0-4.0'	6.0-8.0'
Lab Sample Number	1503-SB01	1503-SB02	1504-SB01	1505-SB01	1506-SB02	1506-SB03	1506-SB04	A10-44119	A11-44121	A12-44109	A13-44110	A14-44111	A15-44401
Sampling Date	6/24/87	6/24/87	6/24/87	6/24/87	8/1/88	8/1/88	8/1/88	8/1/85	8/1/85	8/1/85	8/1/85	8/1/85	8/1/85
PESTICIDES/PCBs													
Aroclor-1242	--	--	0.026	0.15	--	--	--	--	--	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	31	--	10.2	11.8	--	4.39	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	BR-UST-B	BR-UST-E	BR-UST-N	BR-UST-S	BR-UST-W
Sample Depth (feet)	2.0-2.5'	0.5-1.0'	1.5-2.0'	1.5-2.0'	1.5-2.0'	2.0-2.5'	1.5-2.0'	3.5-4.0'	10.0-10.0'	5.0-5.0'	5.0-5.0'	5.0-5.0'	5.0-5.0'
Lab Sample Number	C-1-40317	C-2-40318	C-3-40319	C-4-40320	C-5-40321	C-6-40322	C-7-40323	C-8-40324	BR-UST-B	BR-UST-E	BR-UST-N	BR-UST-S	BR-UST-W
Sampling Date	6/1/85	6/1/85	6/1/85	6/1/85	6/1/85	6/1/85	6/1/85	6/1/85	6/1/91	6/1/91	6/1/91	6/1/91	6/1/91
PESTICIDES/PCBs													
Aroclor-1242	--	--	--	--	--	--	--	--	--	--	0.024	0.032	--
Aroclor-1248	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	GAS-UST-B	GAS-UST-E	GAS-UST-N	GAS-UST-S	GAS-UST-W	BG01(MW01)	MW33	
Sample Depth (feet)	6.0-6.0'	3.0-4.0'	5.0-5.0'	6.0-5.0'	3.0-4.0'	5.5-6.0'	6.0-8.0'	14.0-16.0'
Lab Sample Number	GAS-UST-B	GAS-UST-E	GAS-UST-N	GAS-UST-S	GAS-UST-W	BG01-SB01	MW33-004	MW33-008
Sampling Date	6/1/91	6/1/91	6/1/91	6/1/91	6/1/91	7/1/88	4/20/92	4/20/92
PESTICIDES/PCBs								
Aroclor-1232	--	--	--	--	--	--	--	--
Aroclor-1242	2.357	--	--	0.187	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--

Refer to data qualifying notes provided for TABLE VI

DATA QUALIFYING NOTES FOR TABLE VI

--: The compound was not detected.

(0.49): The value in parentheses Indicates concentration detected for a duplicate sample.

P: For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

*: For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

1200 Bold and shaded cell indicates concentration exceeds 100 ppm, the concentration allowable to be left on site in accordance with current PCB remediation policy (40 CFR 761.61)

TABLE VII
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	MW-2		MW-4	MW-6		MW-8		MW-10		MW-12		MW-14	
	1988	1998	1998	1988	1998	1988	1998	1988	1998	1988	1998	1988	1998
Aroclor-1016	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1221	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	1.4	--	42	--	35	--	1.7	--	--	--	--
Aroclor-1248	86	90	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1262	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1268	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes: All results are in ug/L.
Ground Water Quality Standard for Total PCBs is 0.5 ug/L; GWQS is not available for individual Aroclors.

TABLE VII
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	MW-16		MW-17	MW-18	MW-20		MW-21		MW-22	MW-23		MW-24	
	1988	1998	1998	1993	1990	1998	1990	1998	1998	1995	1998	1990	1998
Aroclor-1016	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1221	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1232	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1242	--	8.2	150	--	--	--	--	--	5.7	*	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	0.38	--	*	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1262	--	--	--	--	--	--	--	--	--	*	--	--	--
Aroclor-1268	--	--	--	--	--	--	--	--	--	*	--	--	--

Notes: All results are in ug/L.
Ground Water Quality Standard for Total PCBs is 0.5 ug/L; GWQS is not available for individual Aroclors.

TABLE VII
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	MW-26		MW-27	MW-28		MW-33	CW-3*	CW-5*	CW-7**	CW-9*	CW-11*
	1990	1998	1998	1990	1998	1998	1993	1993	1995	1993	1993
Aroclor-1016	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1221	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	4.1	--	--	--	22 (--)	180 (100)	2170	-- (--)	11 (--)
Aroclor-1248	--	--	--	--	0.3	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1262	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1268	--	--	--	--	--	--	--	--	--	--	--

Notes: All results are in ug/L.
Ground Water Quality Standard for Total PCBs is 0.5 ug/L; GWQS is not available for individual Aroclors.
*: Filtered and unfiltered samples were collected from this well. The value in parentheses () indicates results from the filtered sample.
**: The well is reported to have had product in it at the time of sampling.

TABLE VII
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER (SHALLOW WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	CW-15**	CW-18*	CW-19	CW-21*
	1993	1993	1993	1993
Aroclor-1016	--	--	--	--
Aroclor-1221	--	--	--	--
Aroclor-1232	--	--	--	--
Aroclor-1242	470 (--)	180 (100)	1.9	-- (--)
Aroclor-1248	--	--	--	--
Aroclor-1254	--	--	--	--
Aroclor-1260	--	--	--	--
Aroclor-1262	--	--	--	--
Aroclor-1268	--	--	--	--

Notes: All results are in ug/L.
Ground Water Quality Standard for Total PCBs is 0.5 ug/L; GWQS is not available for individual Aroclors.
*: Filtered and unfiltered samples were collected from this well. The value in parentheses () indicates results from the filtered sample.
**: The well is reported to have had product in it at the time of sampling.

TABLE VIII
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER (DEEP WELLS)
Hexcel Facility
Lodi, New Jersey

Well ID	MW-1		MW-3		MW-5	MW-7		MW-9		MW-11		MW-13		MW-15		MW-19
	1988	1998	1988	1998	1998	1988	1998	1988	1998	1988	1998	1988	1998	1988	1998	1998
Aroclor-1016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1221	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1232	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1242	--	--	--	0.35	--	--	--	--	1.5	--	--	--	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1262	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor-1268	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes: All results are in ug/L.
Ground Water Quality Standard for Total PCBs is 0.5 ug/L; GWQS is not available for individual Aroclors.

TABLE IX
BASE/NEUTRAL AND ACID EXTRACTABLE EXCEEDANCES IN SOIL SAMPLES
Hexcel Facility
Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	RDCSCC (mg/kg)	Comments
113	4/20/1992	113-003	4.0-5.0	2,6-Dinitrotoluene	1.2	1	
F1	8/1/1985	F1-44403	1.0-1.0	Benzo(a)anthracene	1.4	0.9	
GAS-UST-B	6/1/1991	REAR TANK BOTTOM	6.0-6.0	Bis(2-ethylhexyl)phthalate	49.3	49	
GAS-UST-W	6/1/1991	REAR TANK WEST	3.0-4.0	Bis(2-ethylhexyl)phthalate	55.8	49	

Notes:

*: Soil Cleanup Criteria (last revised- 5/3/99). The Residential Direct Contact Soil Cleanup Criteria (RDCSCC) is the most stringent criteria for the BNA parameters.

TABLE X

BASE/NEUTRAL AND ACID EXTRACTABLE (BNAs) EXCEEDANCES IN GROUNDWATER

Hexcel Facility

Lodi, New Jersey

SHALLOW WELLS

Well ID	Sample ID	Company	Date	Constituent	Concentration (ug/L)	GWQS
MW-6	536A-MW06-GW01	Environ	8/88	Bis(2-ethylhexyl)Phthalate*	39.0	30
	536A-MW06-GW01DL	Environ	8/88	Bis(2-ethylhexyl)Phthalate*	33.0 J	30
MW-8	536A-MW08-GW01	Environ	8/88	2,4-Dimethylphenol	110.0	100
				2-Chlorophenol	73.0	40
				Phenol	6255.8	4000
MW-14	536A-MW14-GW01	Environ	8/88	Bis(2-ethylhexyl)Phthalate*	38.0	30
MW-16	536A-MW16-GW01	Environ	8/88	Bis(2-ethylhexyl)Phthalate*	210.0	30
CW-3	CW-3	Heritage	10/90	2,4-Dichlorophenol	23.0	20
				2,4-Dinitrotoluene	268.0	10
				2-Chlorophenol	1091.0	40
				Hexachlorobutadiene	48.0	1
				Hexachloroethane	68.0	10
				2,4,6-Trichlorophenol	99.0	5 (IGC, C)
				2-Methylphenol	27.0	5 (IGC, C)
				2-Nitrophenol	721.0	100 (IGC, NC)
				4-Methylphenol	25.0	5 (IGC, C)
				4-Nitrophenol	1644.0	100 (IGC, NC)
				2-Nitroaniline	713.0	100 (IGC, NC)
				4-Chlorophenyl Phenyl Ether	2348.0	100 (IGC, NC)
				Azobenzene	327.0	5 (IGC, C)
				Benzoic Acid	2120.0	100 (IGC, NC)
CW-11	CW-11	Heritage	10/90	4-Methylphenol	15.0	5 (IGC, C)
				2-Methylnaphthalene	177.0	100 (IGC, NC)
				Benzoic Acid	346.0	100 (IGC, NC)
CW12	4576A-CW12/166604	Environ	5/95	2-Chlorophenol	53.0 J	40
				Benzoic Acid	1800.0	100 (IGC, NC)
	4576A-CW12D/166605	Environ	5/95	2-Chlorophenol	98.0 J	40

TABLE X

BASE/NEUTRAL AND ACID EXTRACTABLE (BNAs) EXCEEDANCES IN GROUNDWATER

Hexcel Facility

Lodi, New Jersey

DEEP WELLS

Well ID	Sample ID	Company	Date	Constituent	Concentration (ug/L)	GWQS
MW-7	536A-MW07-GW01	Environ	7/88	Bis(2-ethylhexyl)Phthalate*	39.0	30
MW-9	536A-MW09-GW01	Environ	7/88	Bis(2-ethylhexyl)Phthalate*	32.0	30
MW-13	536A-MW13-GW01	Environ	7/88	Bis(2-ethylhexyl)Phthalate*	49.0	30
	536A-MW13-GW11	Environ	7/88	Bis(2-ethylhexyl)Phthalate*	36.0	30
MW-15	536A-MW15-GW01	Environ	7/88	Bis(2-ethylhexyl)Phthalate*	36.0	30

Notes:

GWQS = Ground Water Quality Standards, N.J.A.C. 7:9-6

(IGC,C) = Interim Generic Ground Water Quality Criteria for carcinogenic synthetic organic chemicals.

(IGC,NC) = Interim Generic Ground Water Quality Criteria for non-carcinogenic synthetic organic chemicals.

J = Estimated Concentration.

* = Bis(2-ethylhexyl)Phthalate was detected in all the ground water samples in 1988. Environ had classified the presence of this compound as "ubiquitous in the environment and sometimes associated with the sampling gloves and/or equipment".

TABLE XI

PRIORITY POLLUTANT METALS (PPMs) EXCEEDANCES IN SOIL SAMPLES

Hexcel Facility

Lodi, New Jersey

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	RDCSCC (mg/kg)	Comments
604	12/1/1988	536A-0604-SB01	13.5-14.0	Cadmium	2.3	1	
607	12/1/1988	536A-0607-SB01	13.0-13.5	Cadmium	3.6	1	
608	12/1/1988	536A-0608-SB01	14.0-14.5	Cadmium	1.9	1	
				Mercury	236.0	14	
801	9/1/1988	536A-0801-SB02	1.5-2.0	Antimony	21.7	14	
				Beryllium	2.8	1	
1101	9/1/1988	536A-1101-SB02	1.5-2.0	Antimony	14.9	14	
				Beryllium	1.4	1	
C-1	6/1/1985	C-1-40317	2.0-2.5	Cadmium	2.0	1	
MW33	4/20/1992	MW33-008	14.0-16.0	Thallium	2.9	2	

Notes:

*: Soil Cleanup Criteria (last revised- 5/3/99). The Residential Direct Contact Soil Cleanup Criteria (RDCSCC) is the most stringent criteria for the Priority Pollutant Metals.

TABLE XII

PRIORITY POLLUTANT METALS (PPMs) EXCEEDANCES IN GROUNDWATER

Hexcel Facility

Lodi, New Jersey

SHALLOW WELLS

Well ID	Sample ID	Company	Date	Constituent	Concentration (ug/L)	GWQS
MW-1	536A-MW01-GW01	Environ	7/88	Arsenic	12.5	8
MW-2*	536A-MW02-GW01	Environ	8/88	Antimony	495.0	20
				Arsenic	14.5	8
				Beryllium	70.0	20
				Cadmium	34.0	4
				Chromium	615.0	100
				Lead	410.0	10
				Mercury	24.9	2
				Nickel	752.0	100
MW-6	536A-MW06-GW01	Environ	8/88	Arsenic	10.5	8
MW-8	536A-MW08-GW01	Environ	8/88	Arsenic	16.1	8
				Lead	13.6	10
				Nickel	175.0	100
MW-10	536A-MW10-GW01	Environ	8/88	Arsenic	11.6	8
				Lead	16.9	10
				Nickel	117.0	100
MW-12	536A-MW12-GW01	Environ	8/88	Arsenic	11.0	8
				Lead	43.6	10
MW-14	536A-MW14-GW01	Environ	8/88	Antimony	98.0	20
				Arsenic	17.0	8
				Lead	12.7	10
MW-16*	536A-MW16-GW01	Environ	8/88	Antimony	962.0	20
				Beryllium	167.0	20
				Cadmium	59.0	4
				Chromium	2000.0	100
				Copper	9040.0	1000
				Lead	1860.0	10
				Mercury	47.5	2
				Nickel	1160.0	100

TABLE XII

PRIORITY POLLUTANT METALS (PPMs) EXCEEDANCES IN GROUNDWATER

Hexcel Facility

Lodi, New Jersey

Well ID	Sample ID	Company	Date	Constituent	Concentration (ug/L)	GWQS
MW-18	536A-MW18-GW01	Environ	8/88	Antimony	209.0	20
				Arsenic	84.0	8
				Lead	27.5	10
				Nickel	325.0	100
MW23	ENSRMW-2	ENSR	5/95	Arsenic	18.1	8
MW-24	MW-24	Heritage	11/90	Lead	150.0	10
MW-25	MW-25	Heritage	11/90	Lead	100.0	10
MW-26	MW-26	Heritage	12/90	Arsenic	21.0	8
				Nickel	140.0	100
MW-28	MW-28	Heritage	11/90	Lead	150.0	10
MW29	ENSRMW-3	ENSR	5/95	Cadmium	4.1	4
				Thallium	43.1	10
MW30	ENSRMW-1	ENSR	5/95	Arsenic	132.0	8
				Cadmium	170.0	4
				Chromium	141.0	100
				Lead	108.0	10
				Nickel	297.0	100
MW31	ENSRMW-4	ENSR	5/95	Arsenic	12.3	8

DEEP WELLS

MW-3	536A-MW03-GW01	Environ	8/88	Arsenic	15.6	8
				Lead	10.2	10
MW-7	536A-MW07-GW01	Environ	7/88	Lead	11.3	10

Notes:

GWQS = Ground Water Quality Standards, N.J.A.C. 7:9-6

* = Verification samples were collected in 12/88 for MW-2 and MW-16; these samples did not have exceedence for any metals.

TABLE XIII
SEDIMENT AMPLING RESULTS
Hexcel Facility
Lodi, New Jersey

Sample ID		S-1		S-1		S-2		S-2		S-3		S-3		S-4		S-4	
Sample Date		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97	
Sample Depth		0 to 6"		6 to 12"		0 to 6"		6 to 12"		0 to 6"		6 to 12"		0 to 6"		6 to 12"	
Collected By:		H&A		H&A		H&A		H&A		H&A		H&A		H&A		H&A	
Laboratory ID		274170		274171		274172		274173		274175		274174		274176		274177	
	Units	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCBs																	
Aroclor-1242	ug/Kg	2700		300000		550		2500		130		47 J		560		1100	
Total PCBs	ug/Kg	2700		300000		550		2500		130		47 J		560		1100	
TOC	mg/Kg	896		584		1410		708		453		656		964		460	

Sample ID		S-5		S-5		S-6		S-6		S-7		S-7		FIELD BLANK*	
Sample Date		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97		10/10/97	
Sample Depth		0 to 6"		6 to 12"		0 to 6"		6 to 12"		0 to 6"		6 to 12"			
Collected By:		H&A		H&A		H&A		H&A		H&A		H&A		H&A	
Laboratory ID		274178		274179		274180		274181		274182		274183		274050	
	Units	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCBs															
Aroclor-1242	ug/Kg	--	59	--	58	--	62	--	59	--	130	--	64	--	1
Total PCBs	ug/Kg	--		--		--		--		--		--		--	
TOC	mg/Kg	857		325		367		737		1080		918		--	1

Notes:

Samples S-1 through S-8 were collected by Haley & Aldrich, Inc. for Hexcel Corp.

J: Estimated Concentration.

*: The reporting units for the H&A Field Blank collected on 10/10/97 are ug/L for PCBs and mg/L for TOC.

-- : The compound was not detected. The laboratory method detection limit (MDL), if available, is provided next to the testing result.

TABLE XIII
SADDLE RIVER SEDIMENT TESTING RESULTS: PCBs & TOC
Hexcel Facility
Lodi, New Jersey

Sample ID		SDSR-SS01		SDSR-SS02		P-1		P-2		P-3		SED-UP		SED-DOWN	
Sample Date		Jun-87		Jun-87		9/27/96		9/27/96		9/27/96		4/28/95		4/28/95	
Sample Depth						0 TO 6"		0 TO 6"		0 TO 6"		0 TO 6"		0 TO 6"	
Collected By:		ENVIRON		ENVIRON		ENSR		ENSR		ENSR		ENSR		ENSR	
Laboratory ID						63789		63790		63791		23861		23862	
	Units	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCBs															
Total PCBs	ug/Kg	300		2400		160		--	81	--	83	200		--	
TOC	mg/Kg											7450		6570	

Sample ID		Site#1		Site#2	Site#3	Site#4	Site#5	Site#6	Site#7	Site#8
Sample Date		Dec-83		Dec-83	Dec-83	Dec-83	Dec-83	Dec-83	Dec-83	Dec-83
Sample Depth										
Collected By:		Army Corps		Army Corps	Army Corps	Army Corps	Army Corps	Army Corps	Army Corps	Army Corps
Laboratory ID										
	Units	Result	MDL							
PCBs										
Total PCBs	ug/Kg	20		80	370	80	40	--	110	210
TOC	mg/Kg	11073		8907	7989	5176	8345	15240	14147	27174

Notes:
Individual Arocior data are not available for results tabulated on this page.
Samples SDSR-SS01 and SDSR-SS02 were collected by Environ for Hexcel Corp. (Reference: Summary Report of Preliminary Environmental Sampling at the Fine Organics Corp., Oct 1987)
Samples P-1 through P-3 were collected by ENSR for Napp Technologies, Inc. (Reference: Remedial Invetigation Report/Remedial Investigation Workplan Addendum, June 1997)
Samples SED-UP and SED-DOWN were collected by ENSR for Napp Technologies, Inc. (Reference: Figure C-3, Remedial Invetigation Report, Feb.1996)
Samples Site#1 through Site#8 were collected by the U.S. Army Corps of Engineers (Reference: Interim Report on Flood Protection Feasibility Lower Saddle River, Bergen Co, N.J., Aug 1984)
J: Estimated Concentration.
-- : The compound was not detected. The laboratory method detection limit (MDL), if available, is provided next to the testing result.

TABLE XIV
REPRESENTATIVE 2-PHASE EXTRACTION PROJECTS IMPLEMENTED BY HALEY & ALDRICH, INC.

PROJECT	SIZE IN PLAN VIEW (ACRES)	DEPTH (Ft.)	TYPE OF SOIL	PERMEABILITY (cm/sec)	NO. OF MONTHS IN OPERATION	MASS REMOVAL (Lbs. over months of operation or removal rate)	CONTAMINANTS
*Xerox Corporation Irvine, California	14	15-70	Clay	10^{-7}	28	>2,500	Chlorinated Solvents
Product Terminal Long Beach, California	4	30	Very Heterogeneous	10^{-6}	1 Week	12 lbs./hr	Gasoline/Floating Products
Xerox Building 209 Webster, NY (Full Scale)	6.7	30 - 35	Fill, Glacial Till, Lacustrine	10^{-4} to 10^{-5}	40	>20,000	Chlorinated Solvents and Mineral Spirits (LNAPL)
Xerox Blauvelt Site Blauvelt, NY (Full Scale)	≈ 15	25	Glacial Till	10^{-4} to 10^{-5}	30	>35,000	Chlorinated Solvents and Mineral Spirits (LNAPL)
Manufacturing Site Illinois (Full Scale).	1.5	20	Low-Permeability Clays and Silts	10^{-6} to 10^{-7}	8	5,300	Chlorinated and Stoddard Solvents
Xerox Building 801 Henrietta, NY (Full Scale)	2	15	Lacustrine Silt and Clay, Glacial Till	10^{-4} to 10^{-6}	31	8,400	Chlorinated Solvents and Mineral Spirits (LNAPL)
Manufacturing Site Rochester, NY (Full Scale)	200 ft^2	16	Clayey Till	10^{-7} to 10^{-8}	2	150	TCE
Gasoline Station New Hampshire (Pilot Test)	10,000 ft^2	20	Shallow Low-Permeability Fill, Clay	10^{-5}	3-Day Test	3,240	Petroleum Products (Gasoline with Floating Product)
Xerox Salt Road Complex Webster, NY (Full-Scale)	10,000 ft^2	20	Glacial Till	10^{-4}	12 months	30 lbs./day	Chlorinated Solvents

TABLE XIV
REPRESENTATIVE 2-PHASE EXTRACTION PROJECTS IMPLEMENTED BY HALEY & ALDRICH, INC.

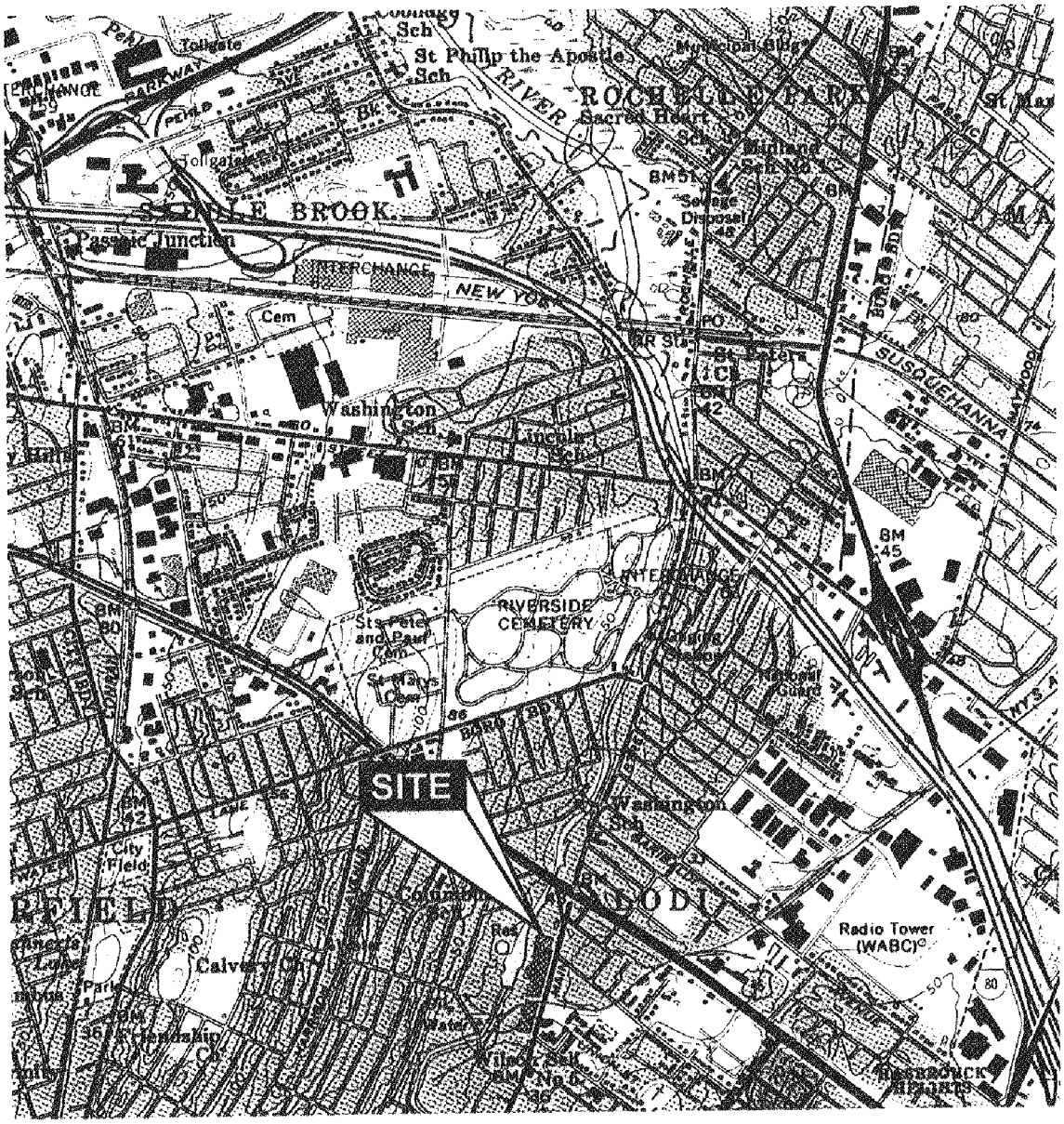
PROJECT	SIZE IN PLAN VIEW (ACRES)	DEPTH (Ft.)	TYPE OF SOIL	PERMEABILITY (cm/sec)	NO. OF MONTHS IN OPERATION	MASS REMOVAL (Lbs. over months of operation or removal rate)	CONTAMINANTS
Gasoline Station Richmond, Virginia (Pilot Test)	2	27	Clay, Silt, Micaceous Sands	10^{-5}	3-Day Test	15-20 lbs./day	BTEX Compounds with Free-Phase Product
Former Manufacturing Site Cincinnati, Ohio (Pilot Test)	15	30 - 35	Fill, Till, and Confined Sand	10^{-3} to 10^{-6}	2-Day Test	10-15 lbs./day	Chlorinated Solvents Including DNAPL
Former Manufacturing Site Boston, MA (Full-Scale)	2.5	25	Fill, Glacial Till, and Decomposed Rock	10^{-4}	12	5 lbs./day	Chlorinated Solvents and Cutting Oils
Petroleum Refinery Lake Charles, LA (Pilot Test)	17	15 40	Peat Confined sand layer	10^{-7} to 10^{-8} 10^{-4}	5-Day Test	10-20 lbs./hr	1,2-DCA
Gasoline Transfer Station, New York (Pilot Test)	320,000 ft^2	10	Sand and Gravel	10^{-1} to 10^{-2}	2-Day Test	550 gallons of free product	Gasoline / Free Product Recovery
Former Metals Manufacturing Co. Boston Area	3	20	Fill, Clay	10^{-6}	3 Months	900 pounds to date	Chlorinated Solvents
Product Terminal Facility Albuquerque, NM	3	110	Arid Alluvial Deposit	10^{-3} to 10^{-4}	2 weeks	>50lbs./day	Gasoline / Free Product Recovery
Packaging Facility Mercedes, TX (Pilot Test)	30,000 ft^2	17	"Beach" Sand	10^{-3}	2-Day Test	300 lbs./day	Gasoline / Free-Product Recovery

TABLE XIV
REPRESENTATIVE 2-PHASE EXTRACTION PROJECTS IMPLEMENTED BY HALEY & ALDRICH, INC.

PROJECT	SIZE IN PLAN VIEW (ACRES)	DEPTH (Ft.)	TYPE OF SOIL	PERMEABILITY (cm/sec)	NO. OF MONTHS IN OPERATION	MASS REMOVAL (Lbs. over months of operation or removal rate)	CONTAMINANTS
*Xerox Oak Brook Oak Brook, IL (Full Scale)	12	15	Weathered and Unweathered Clay	10^{-7} to 10^{-8}	14	5,000	Chlorinated Solvents and Mineral Spirits (site closed)
Former Chemical Distribution Facility Denver, Colorado (Pilot Test)	15	20	Silty Sand overlaying Alluvium Units	10^{-3} to 10^{-6}	30 Day Test	2,500	Chlorinated Solvents and Mineral Spirits

* Site is Closed.

FIGURES



NOTE:
THE BUILDINGS SHOWN AT THE SITE IN THE USGS MAP WERE DEMOLISHED IN 1999.

SOURCE:
HACKENSACK QUADRANGLE, NEW JERSEY, USGS 7.5 MINUTE SERIES (TOPOGRAPHIC), DATED 1955, PHOTOREVISED 1981.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
160 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3666
FAX: 973-361-3600

HEXCEL FACILITY
LODI, NEW JERSEY

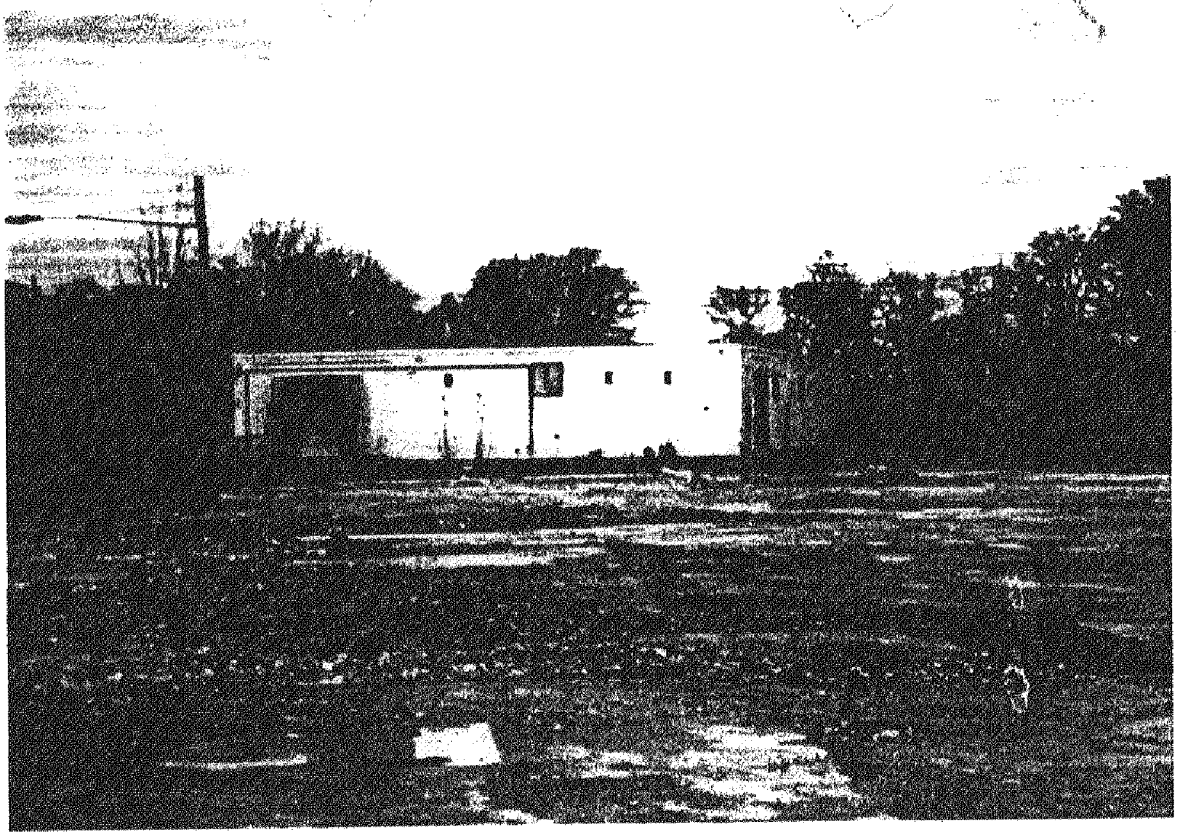
SITE LOCATION MAP

SCALE: 1"=2000'

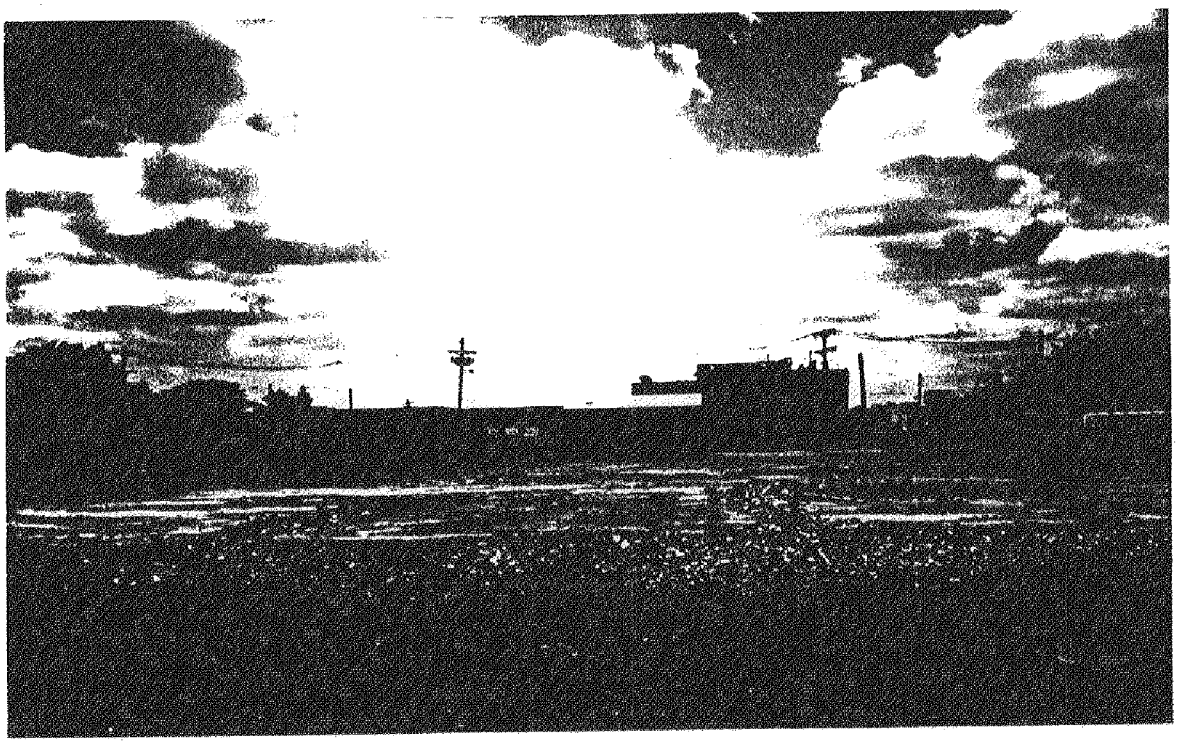
NOVEMBER 1999

FIGURE 1

FILE: SITEMAP.PSD 74167-017



Existing Building (Warehouse)



Floor slabs remaining after demolition (Napp Technologies can be seen in background)

HALEY & ALDRICH

FIGURE 3

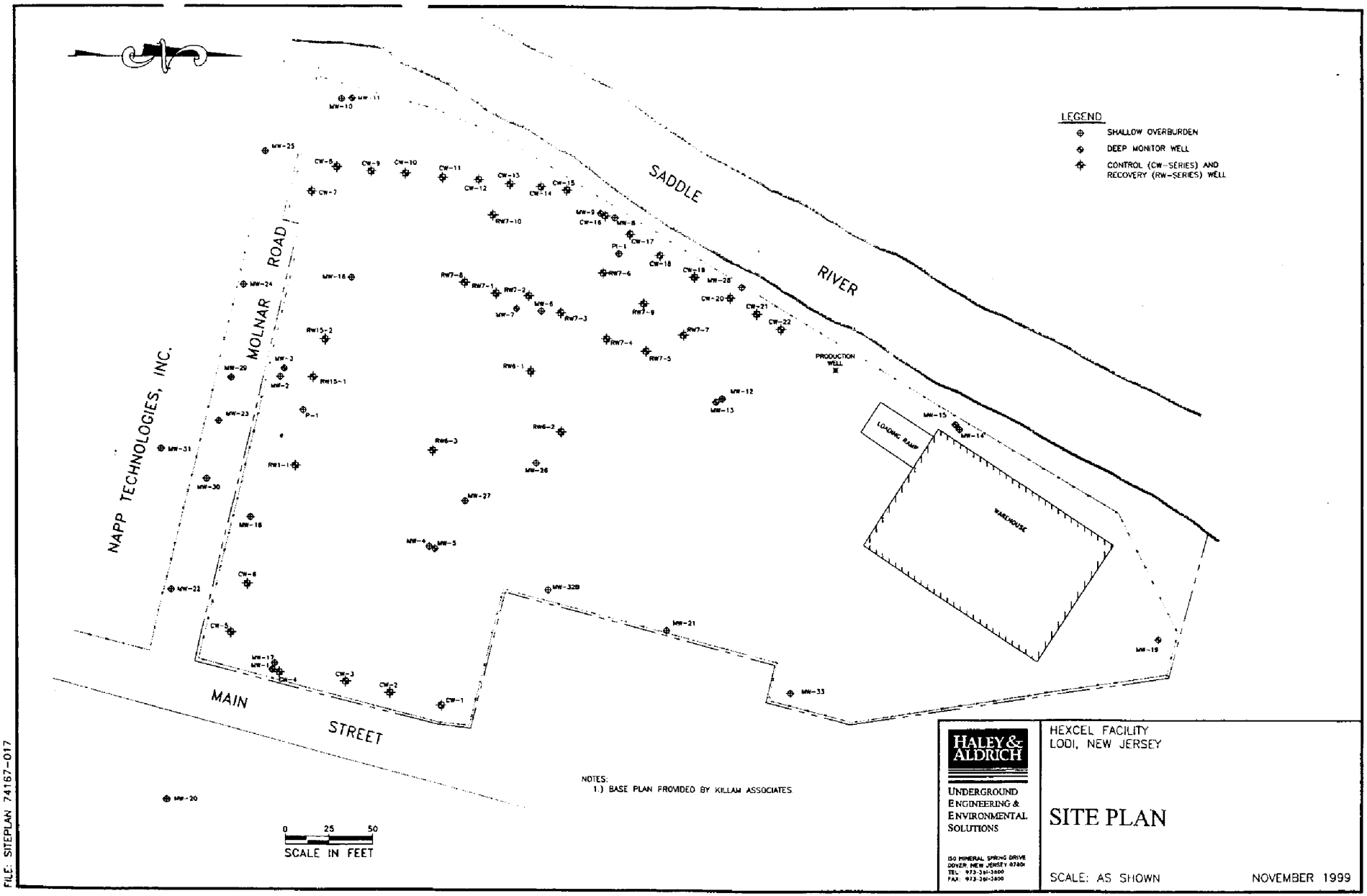
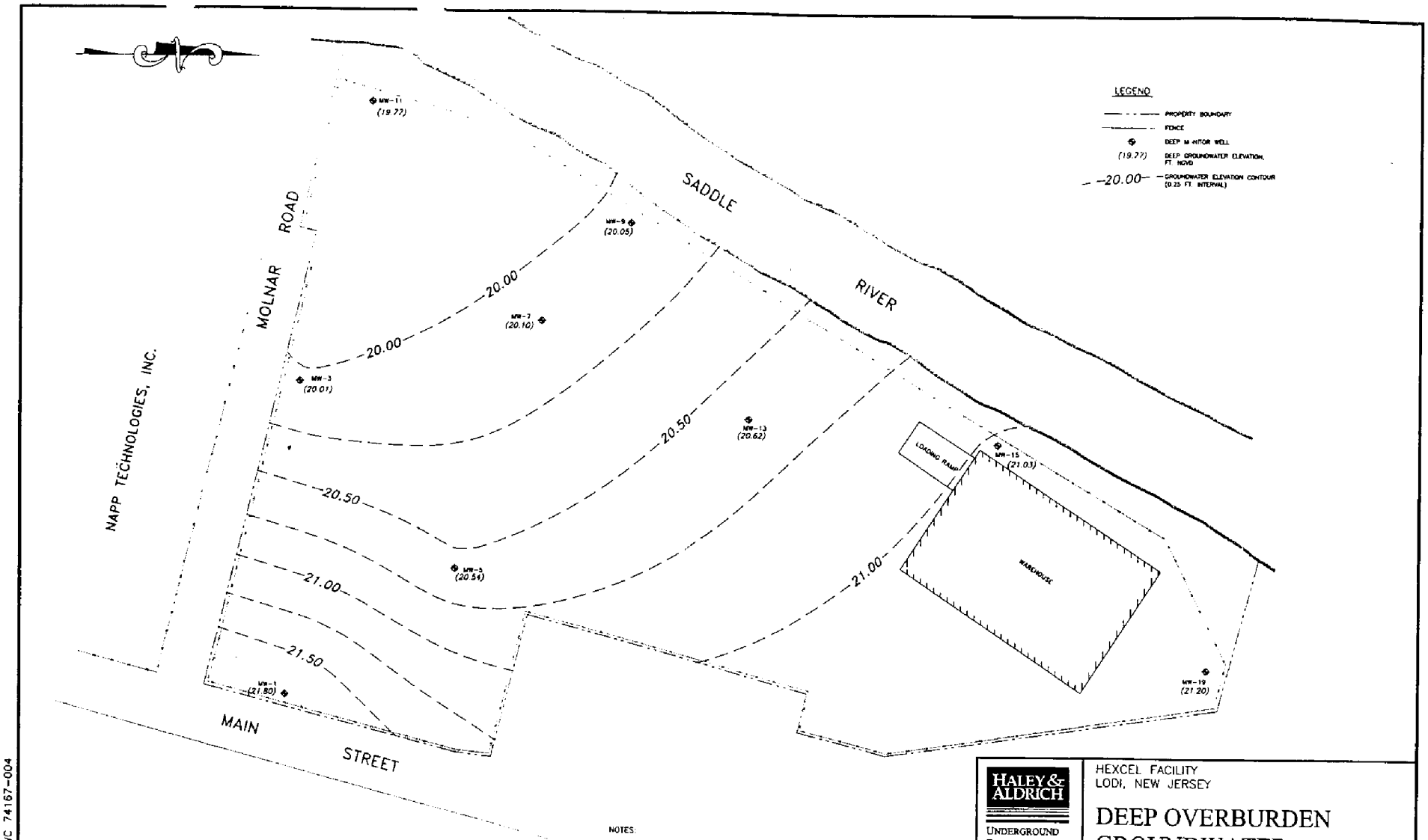


FIGURE 2

TIERRA-B-012099



NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) ALL ELEVATIONS IN FEET, NGVD (NATIONAL GEODETIC VERTICAL DATUM).

3.) CONTOURS WERE COMPUTER-GENERATED USING A KRIGING ROUTINE.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3690

HEXCEL FACILITY
LODI, NEW JERSEY

DEEP OVERBURDEN GROUNDWATER ELEVATION CONTOURS ON 7/13/99

SCALE: AS SHOWN

NOVEMBER 1999

FILE: DEEP-GWC 74167-004

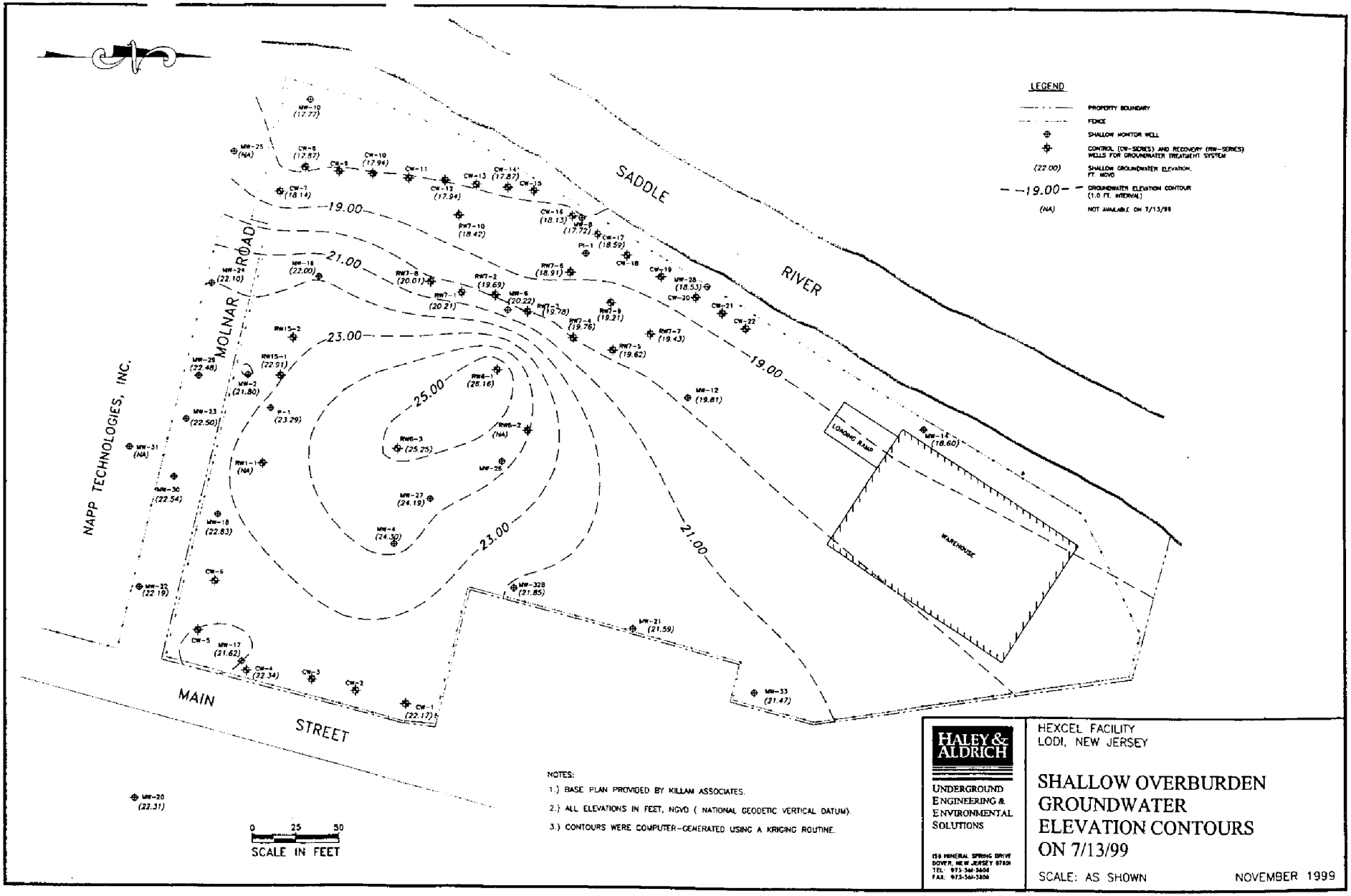
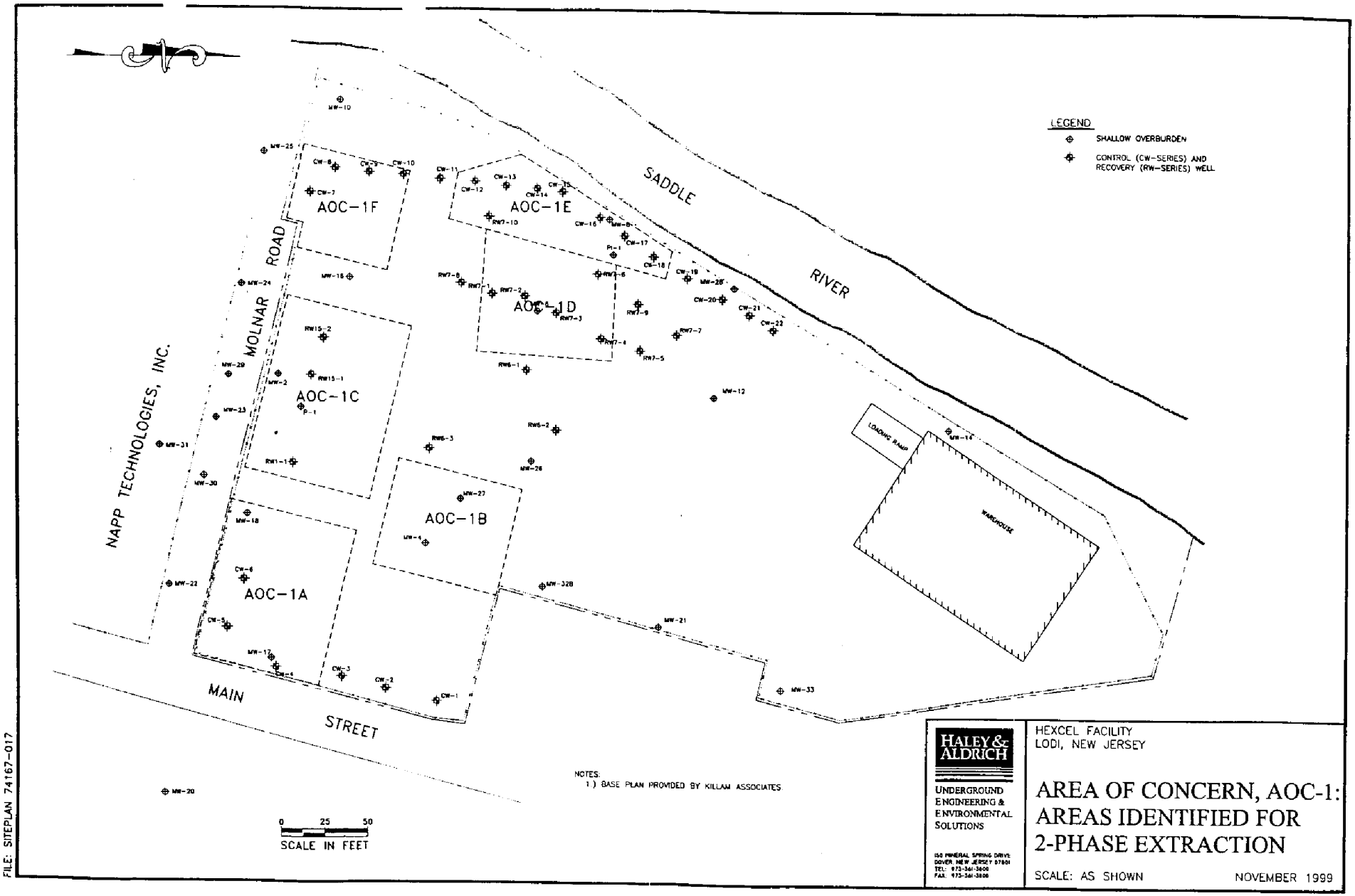

LEGEND
PROPERTY BOUNDARY
FENCE
SHALLOW MONITOR WELL
CONTROL (CW-SERIES) AND RECOVERY (RW-SERIES) WELLS FOR GROUNDWATER TREATMENT SYSTEM
(22.00) SHALLOW GROUNDWATER ELEVATION, FT. NGVD
-19.00- GROUNDWATER ELEVATION CONTOUR (1.0 FT. INTERVAL)
(NA) NOT AVAILABLE ON 7/13/99
SADDLE RIVER
MOLNAR ROAD
NAPP TECHNOLOGIES, INC.
MAIN STREET
19.00
21.00
23.00
25.00
LOADING RAMP
WAREHOUSE
0 25 50
SCALE IN FEET
NOTES:
1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.
2.) ALL ELEVATIONS IN FEET, NGVD (NATIONAL GEODETIC VERTICAL DATUM).
3.) CONTOURS WERE COMPUTER-GENERATED USING A KRIGING ROUTINE.
HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
159 MINERAL SPRING DRIVE DOVER, NEW JERSEY 07801 TEL: 973-361-3400 FAX: 973-361-3406
HEXCEL FACILITY
LODI, NEW JERSEY
SHALLOW OVERBURDEN GROUNDWATER ELEVATION CONTOURS ON 7/13/99
SCALE: AS SHOWN
NOVEMBER 1999
FILE: SHAL-GWC 74167-004

FIGURE 5



HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

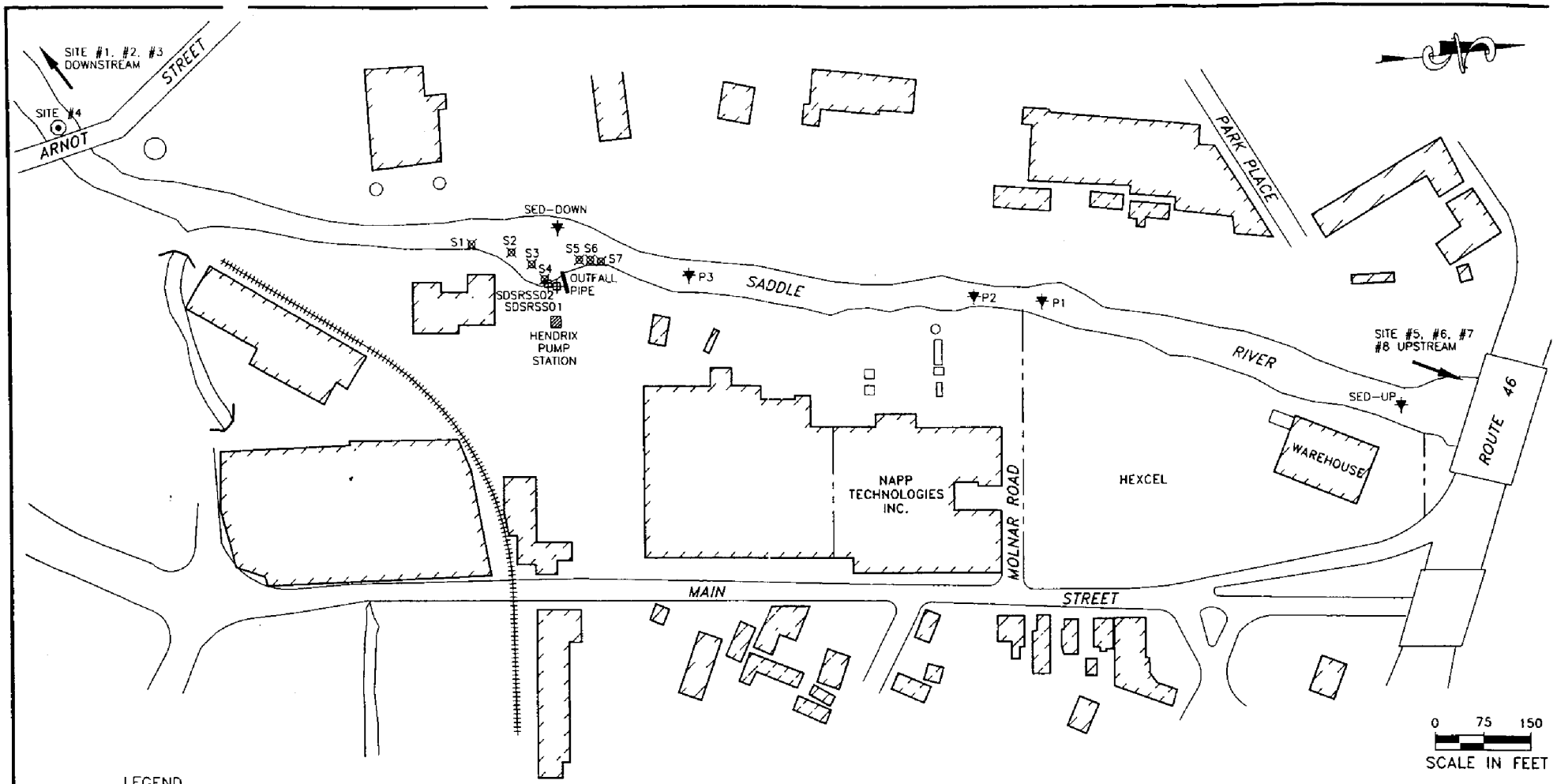
AREA OF CONCERN, AOC-1: AREAS IDENTIFIED FOR 2-PHASE EXTRACTION

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SITEPLAN 74167-017

TIERRA-B-012102



LEGEND

- SEDIMENT SAMPLE LOCATION COLLECTED BY HALEY & ALDRICH, OCTOBER 1997
- SEDIMENT SAMPLE LOCATION COLLECTED BY ENSR, APRIL 1995 AND SEPTEMBER 1996
- SEDIMENT SAMPLE LOCATION COLLECTED BY ENVIRON, JUNE 1987
- SEDIMENT SAMPLE LOCATION COLLECTED BY ARMY CORPS OF ENGINEERS, DECEMBER 1983

NOTES:

1. BASE PLAN FROM "DELINEATION OF FLOODWAY AND FLOOD HAZARD AREA", BY THE STATE OF NEW JERSEY DEPT. OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES, PLATE NO. 2, DATED FEBRUARY 1986.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3400
FAX: 973-361-3600

HEXCEL FACILITY
LODI, NEW JERSEY

SEDIMENT SAMPLING LOCATIONS

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SEDIMENT 74167-017

FIGURE 12

TIERRA-B-012103

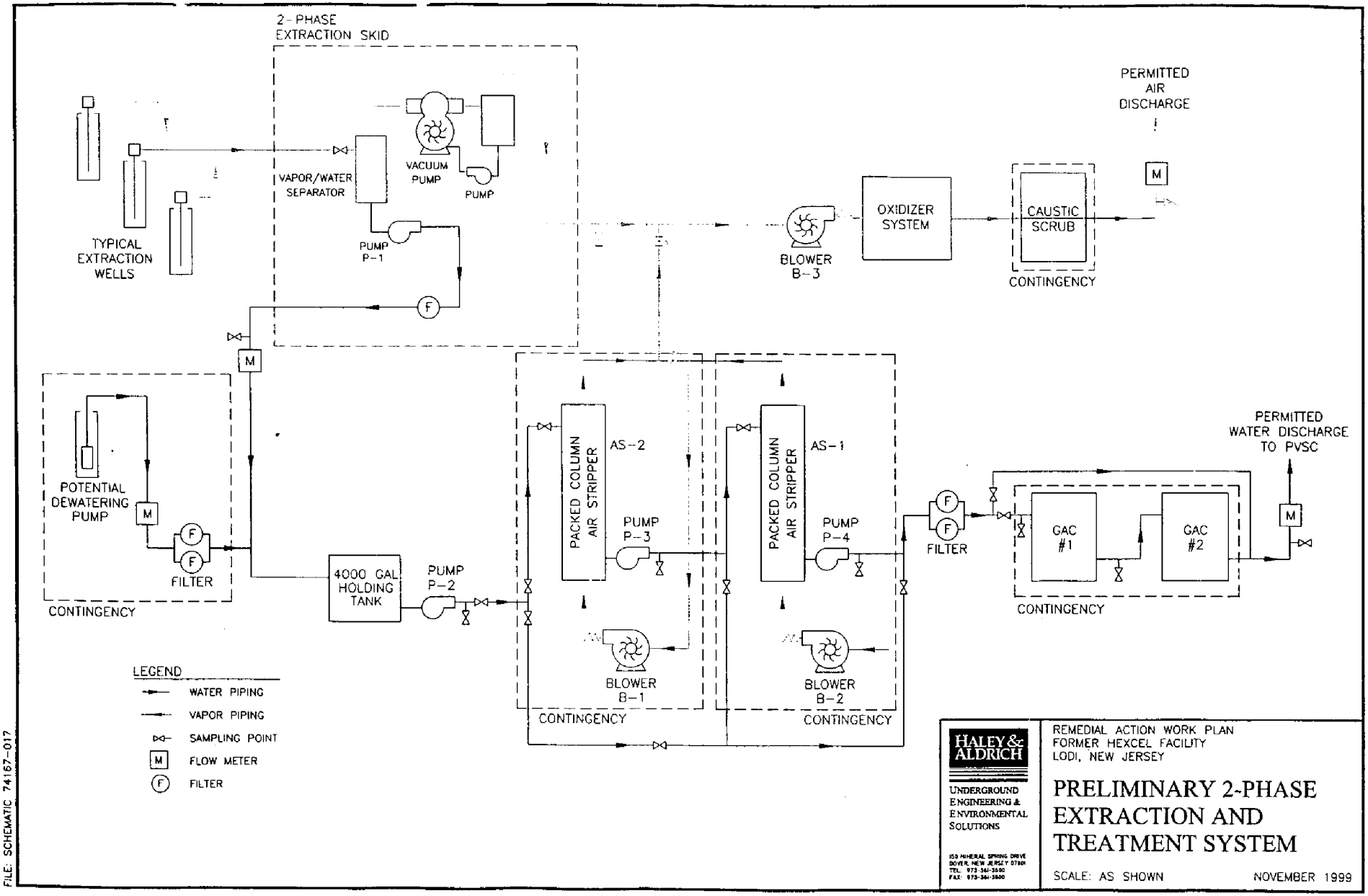
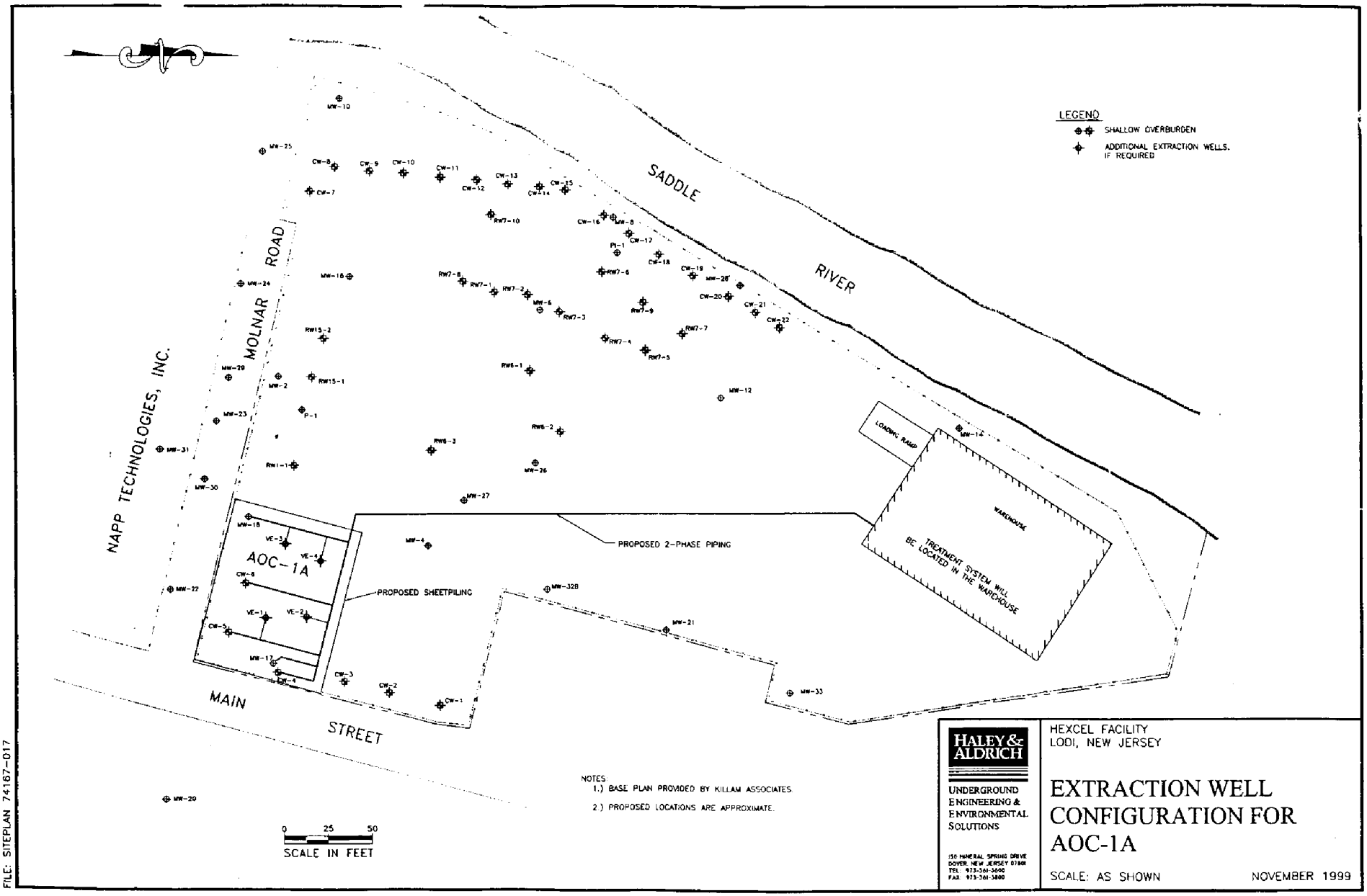

2-PHASE
EXTRACTION SKID
TYPICAL
EXTRACTION
WELLS
VAPOR/WATER
SEPARATOR
VACUUM
PUMP
PUMP
PUMP
P-1
BLOWER
B-3
OXIDIZER
SYSTEM
CAUSTIC
SCRUB
CONTINGENCY
PERMITTED
AIR
DISCHARGE
M
POTENTIAL
DEWATERING
PUMP
FILTER
CONTINGENCY
4000 GAL
HOLDING
TANK
PUMP
P-2
PACKED COLUMN
AIR STRIPPER
AS-2
PUMP
P-3
BLOWER
B-1
CONTINGENCY
PACKED COLUMN
AIR STRIPPER
AS-1
PUMP
P-4
BLOWER
B-2
CONTINGENCY
FILTER
GAC
#1
GAC
#2
CONTINGENCY
PERMITTED
WATER DISCHARGE
TO PVSC
LEGEND
WATER PIPING
VAPOR PIPING
SAMPLING POINT
FLOW METER
FILTER
FILE: SCHEMATIC 74167-017
HALEY & ALDRICH
UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS
REMEDIAL ACTION WORK PLAN
FORMER HEXCEL FACILITY
LODI, NEW JERSEY
PRELIMINARY 2-PHASE
EXTRACTION AND
TREATMENT SYSTEM
SCALE: AS SHOWN
NOVEMBER 1999

FIGURE 15



FILE: SITEPLAN 74167-017

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL 973-361-3000
FAX 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

EXTRACTION WELL CONFIGURATION FOR AOC-1A

SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 13

TIERRA-B-012105

Appendix A

Hydrological Testing Report

Woodward-Clyde

TO: Mr. Robert Shusko
GEO ENGINEERING, INC
150 Mineral Spring Drive
Dover, NJ 07801

DATE: February 5, 1996
NAME: Greg Thomas
PROJECT NO.: 85C4445 D

Transmittal

X Enclosed	__ Copy of Letter	__ Prints	__ As Requested
__ Under Separate Cover	__ Contracts	__ Photostats	__ Approved
X First Class Mail	__ Documents	__ Tracings	__ Approved As Noted
__ Messenger	X Test Results	__ Sepias	__ Re-Submit
__ Special Delivery	__ Specifications	__ For Comments	__ Return
__ Air Mail	__ Drilling Logs	__ For Approval	__ Corrected Prints
__ Fed. Express	__ Photos	__ For Your Use	__
	__ Project Memo	__ For Your Files	

ITEM NO.	DESCRIPTION
1	Test results for HEXCEL Site per request of Sunila Gupta

REMARKS:

Copies to: file
/d001trm.doc

From: Gregory Thomas

Geotechnical Laboratory
45 H Commerce Way
Totowa, NJ 07512
• (201) 812-1818 • Fax (201) 812-8640

Project No.: 85C4445-D File: INDX1.XLS

TABLE _____

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

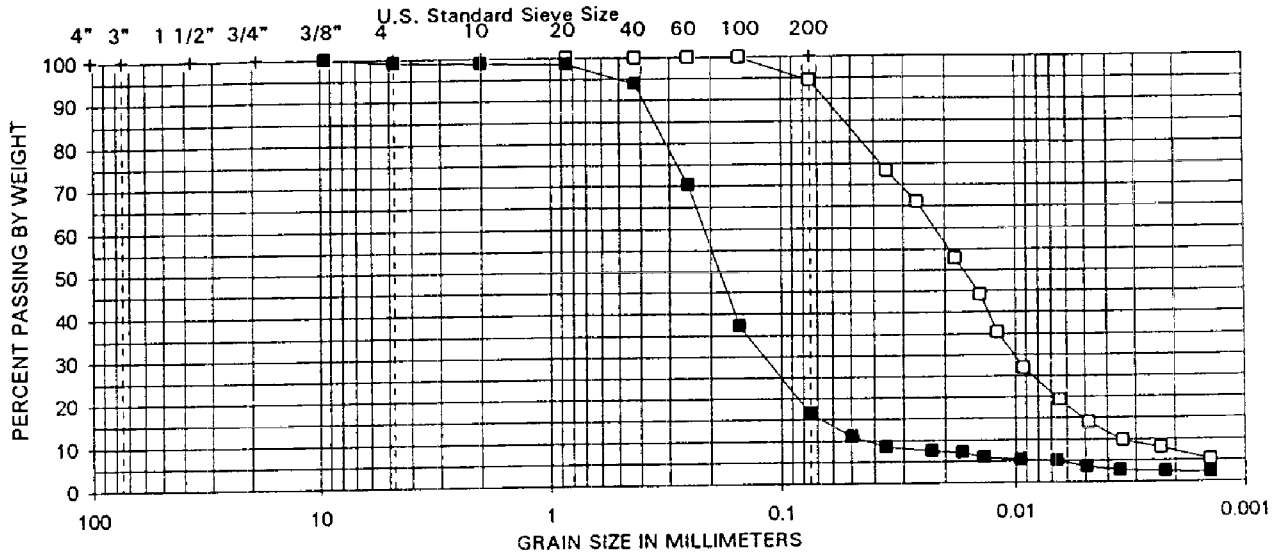
BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS										REMARKS
			WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT (1)	PLAS. IND.	USCS SYMB. (2)	SIEVE MINUS NO. 200 (%)	HYDROMETER % MINUS 2 um (%)	TOTAL UNIT WEIGHT (pcf)	SPECIFIC GRAVITY	POROSITY	
S3	3	9-11	18.4							131.9	2.706	0.341	
S3	3	top	18.6										
S3	3	9.25			np		ML	94.5	7		2.706		
S3	3	mid	18.2										
S9	3	8-11	19.7				SM	16.4	2	95.3/119.5	2.657	0.520/0.398	loose and compacted unit weights
S9	4	11-12	10.8				GP-GM	9.4	1	112.9/137.4	2.685	0.392/0.260	loose and compacted unit weights
S10	4	14-15	16.4				SP	2.1					
S12	3		20.4		np		ML	97.8	7	131.5	2.724	0.358	
S13	1	0-4	8.0				GM	15.8	3	92.7/115.0	2.701	0.491/0.369	loose and compacted unit weights
S13	4		18.4		np		ML	98.5	10	141.4	2.726	0.298	
S14	4	11.5-14	10.2				GP-GM	10.6	1	114.4/138.9	2.685	0.381/0.248	loose and compacted unit weights
S16	4		20.1		np		ML	98.2	7	139.2	2.721	0.318	

Note: (1) np indicates material non-plastic. Unable to determine liquid limit.
(2) Plasticity of fines for USCS symbol based on visual observation unless Atterberg limits reported.

Prepared by: CMJ Reviewed by: _____ Date: 2/5/96

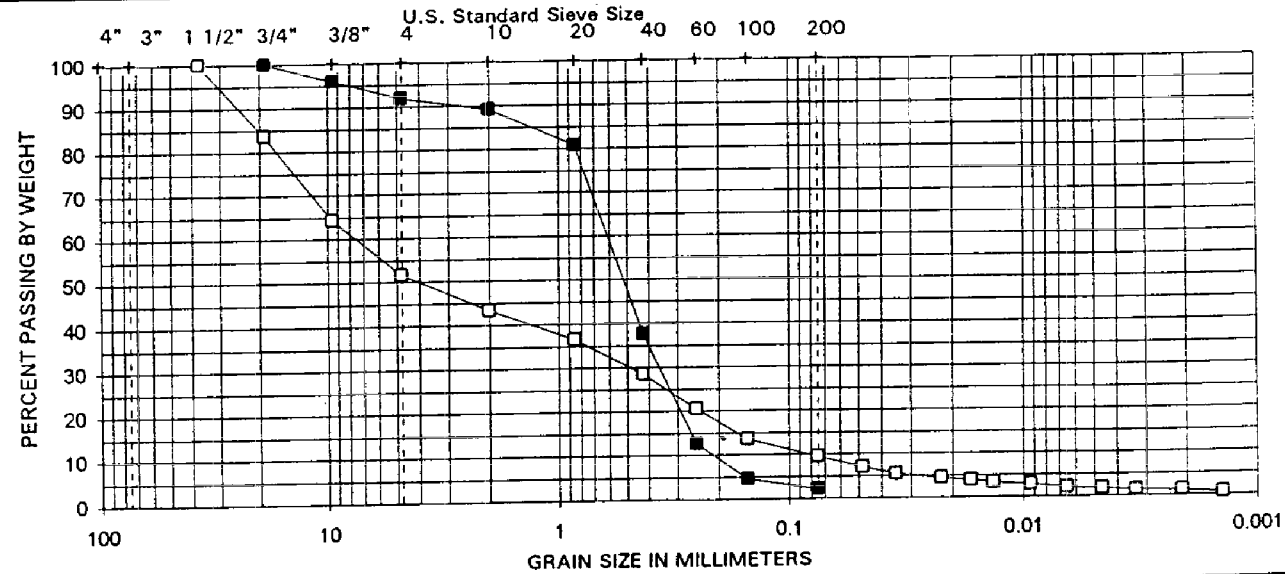
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION	w (%)	LL	PL
S3	3A	9.25	□	ML, brown non-plastic SILT, trace f. sand.	---	---	np
S9	3	8-11	■	SM, brown f. SAND, some silt, trace c-m sand.	19.7	---	---

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

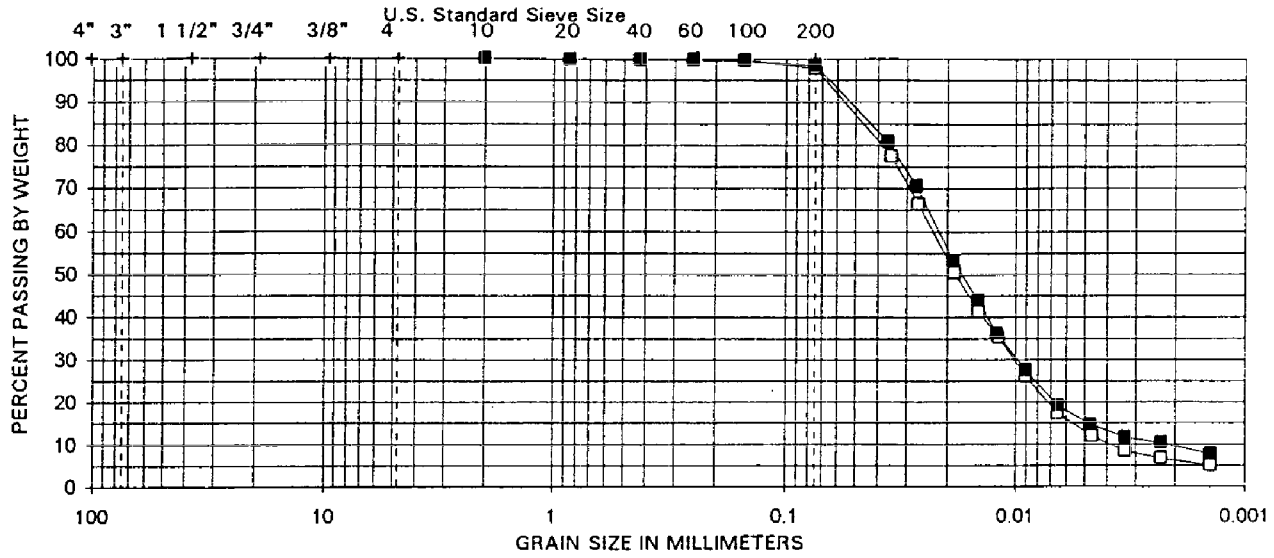


BORING	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION	w (%)	LL	PL
S9	4	11-12	□	GP-GM, brown c-f sandy GRAVEL, trace silt.	10.8	---	---
S10	4	14-15	■	SP, gray m-f SAND, trace f. gravel to c. sand and silt.	16.4	---	---

File: SIEV1B.XLS Project No.: 85C4445-D Plotted by: CMJ Reviewed by: ĴJ Date: 1/15/96

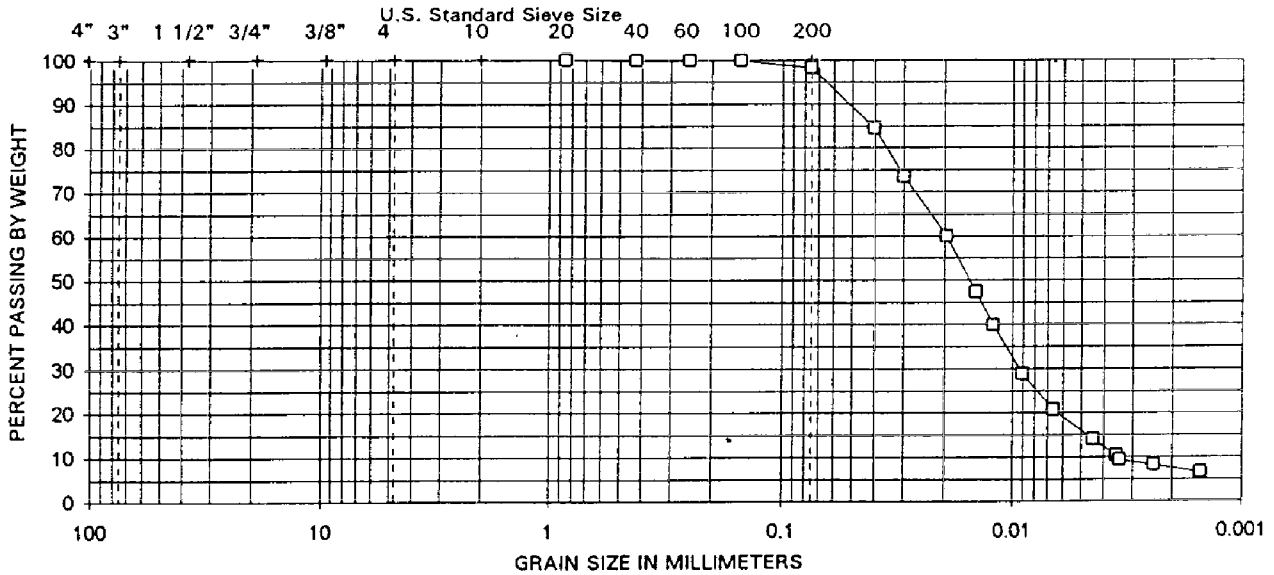
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION	w (%)	LL	PL
S12	3	---	□	ML, brown non-plastic SILT, trace f. sand.	---	---	np
S13	4	---	■	ML, brown non-plastic SILT, trace f. sand.	---	---	np

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION	w (%)	LL	PL
S16	4	---	□	ML, brown non-plastic SILT, trace f. sand.	---	---	np
---	---	---	■		---	---	---

File: SIEV1A.XLS Project No.: 85C4445-D Plotted by: CMJ Reviewed by: [illegible] Date: 1/15/96

Appendix B

2-Phase Extraction Information on the McClellan Air Force Base Pilot Project

ENVIRONMENTAL MANAGEMENT

MCCLELLAN AIR FORCE BASE

This site works best with Internet Explorer and Netscape 2.0 or higher.

Innovative Technology Demonstrations

McClellan Air Force Base has been designated as the Chlorinated Hydrocarbons Remedial Demonstration Site as part of the National Environmental Technology Test Site (NETTS) program. NETTS is a joint Department of Defense and U.S. Environmental Protection Agency (U.S. EPA) program for the evaluation and testing of environmental technologies. The Strategic Environmental Reasearch and Development Program (SERDP) is the parent organization that provides support staff for these technologies tested at McClellan.

McClellan AFB completed the demonstration of six innovative technologies that treat volitile organic compounds (VOCs) and petrolium hydrocarbons in the vapor phase (air). These are: titanium dioxide photocatalytic oxidation, flameless thermal oxidation, regenerable adsorption, photolytic destruction, elastomeric polymer filter media, and nonthermal plasma destruction. A seventh innovative technology demonstrated was 2-phase extraction. This technology extracts VOCs from the soil while simultaneously removing contaminated groundwater.

The evaluations are part of the on-going effort to find cost-effective alternatives to conventional environmental remediation technologies. The demonstrations were completed as part of the Environmental Process Improvement Center (EPIC) partnership between the California Environmental Protection Agency (Cal/EPA), U.S. EPA, and McClellan AFB.

THE NEED:
There are about 10 billion gallons of groundwater beneath McClellan AFB contaminated with volitile organic compounds. Normally, contamination is removed by pumping groundwater from wells to the surface for treatment. McClellan uses soil vapor extraction (SVE) systems to remove contamination from soils. SVE systems draw air through the spaces between soil particles literally stripping away VOCs and generating a contaminated off-gas. Currently, catalytic oxidation (cat-ox) or granular activated carbon (GAC) is used to remove VOCs from vapors. These off-gas treatment systems can be expensive to operate.

There are sites on McClellan AFB where both soil and groundwater contamination exist in the same location. McClellan is continually looking for new and cost-effective alternatives to assist in the environmental remediation of the site.

Innovative Technology Index, McClellan AFB

ENVIRONMENTAL MANAGEMENT

2-Phase Extraction from Soil and Groundwater

McClellan AFB has completed the demonstration of an innovative technology known as 2-Phase™ Extraction patented by Xerox, Inc. This technology extracts volatile organic compounds (VOCs) from the soil while simultaneously removing contaminated groundwater. As discussed in the technology introduction, the demonstration was completed as part of the Environmental Process Improvement Center (EPIC) partnership between the California Environmental Protection Agency (Cal/EPA), U.S. EPA, and McClellan AFB.

THE NEED:
There are about 10 billion gallons of groundwater beneath McClellan AFB contaminated with volitile organic compounds. Normally, contamination is removed by pumping groundwater from wells to the surface for treatment. McClellan uses soil vapor extraction (SVE) systems to remove contamination from soils. SVE systems draw air through the spaces between soil particles literally stripping away VOCs and generating a contaminated off-gas. Currently, catalytic oxidation (cat-ox) or granular activated carbon (GAC) is used to remove VOCs from vapors. These off-gas treatment systems can be expensive to operate.

There are sites on McClellan AFB where both soil and groundwater contamination exist in the same location. McClellan is continually looking for new and cost-effective alternatives to assist in the environmental remediation of the site.

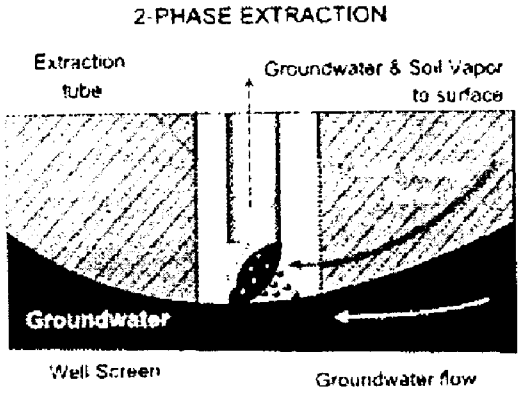
Players	Roles
USAF HQ/AFMC	Finding Organization
USAF McClellan AFB	Principal Investigator
EPIC	Partnership Support
Clean Sites	Public/Private Parnership Support
Radian International	On-site Contractor/ Technical Support

THE OBJECTIVES:
The basic objectives of the demonstration were to determine:

- the effectiveness of the technology at removing contaminants from the soil and groundwater
- the ease of operation and reliability of the system
- the cost effectiveness of the technology

THE TECHNOLOGY:
The 2-Phase Extraction system uses a patented extraction tube to simultaneously remove soil vapor and groundwater from the same well. The extraction tube is lowered so that it just comes into contact with the groundwater. A high vacuum is applied to the well through the extraction tube. This vacuum draws vapors and water up the extraction tube like "slurping" from a straw. The water droplets and

vapor are transported to the surface where they are separated and sent for treatment. Because of the turbulence in the extraction tube, most of the VOCs are shifted from being dissolved in the water to being vapors in the air.

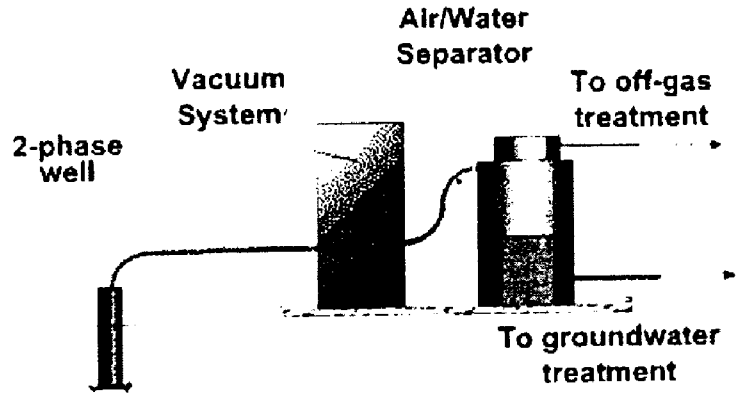


When water is pumped from the ground, the water level within the well and in the surrounding area drops. When around-the-clock pumping occurs, the water level reaches a steady lower level. The extraction tube can be moved up and down within the well to account for lowering of groundwater.

Outside air can also be added into the 2-phase well. In tightly packed soils or during the lowering of the water level in the well, there may not be enough soil vapor entering the well to allow the system to operate efficiently.

THE DEMONSTRATION:
The demonstration was conducted from August 1, 1994, to January 31, 1995, at Investigate Cluster (IC) 1 of Operable Unit (OU) B. OU B covers approximately 325 acres in the southwest portion of McClellan AFB. The area was used from the mid-1940s to 1970 for open bulk storage of liquids. VOCs such as trichloroethene (TCE), tetrachloroethene (PCE), and Freon® 113 have been detected in the soil and groundwater at IC 1.

An existing extraction well (EW-233) was converted from a standard pump-and-treat to a 2-phase extraction well. EW-233 is screened from between 105 feet to 124 feet below ground. Groundwater occurs at about 105 feet below ground in IC 1. The demonstration system consisted of the 2-phase extraction tube in the converted extraction well, the high vacuum unit, and an air/water separator system. During the demonstration, separate granular activated carbon treatment systems were used to treat the contaminated air and groundwater removed.



A total of 1.4 million gallons of groundwater and 24.4 million cubic feet of air were simultaneously removed by the 2-phase system in the six month demonstration. This relates to about 9 pounds per

day of contamination removed by the system. Table 1 shows the amount of contamination removed during the test. Over 99.7% of the contamination removed by the 2-phase system was in the vapor (air) phase. Greater than 60% of the VOCs originally in the groundwater were transferred to the vapor phase with the 2-phase system.

TABLE 3. Amount of Contamination Removed

Contaminant of Concern	Vapor	Groundwater
TCE	4.4	0.08
PCE	2.4	0.0024
Freon 113	1.1	0.0016

Amounts removed (pounds per day)

The 2-phase system was reliable during the demonstration operating over 95% of the time. The system could have removed more contamination, but the activated carbon in the off-gas treatment system needed replacement. During this one month period, the effect of low flow rates was also evaluated. There were no adverse effects noticed during the low flow rate evaluations.

An area extending outwards about 200 feet was effected by the 2-phase extraction well. This is similar to the other SVE systems and groundwater extraction wells in operation in OU B.

RETURN ON INVESTMENT:
Before conversion to a 2-phase extraction system, EW-233 and a neighboring extraction well together had removed an average of 129 pounds of contamination per year from the groundwater of IC 1. In the first six months, the 2-phase converted EW-233 removed about 1600 pounds of contamination from the soil and groundwater of IC 1.

The use of 2-phase extraction has accelerated the clean-up of soil and groundwater contamination at McClellan AFB. This accelerated clean-up will help reduce the overall cost of the environmental clean-up at McClellan AFB.

CONCLUSIONS:
The 2-phase extraction system installed for this demonstration is still in operation at IC 1. Other 2-Phase extraction systems are being installed, when appropriate, at McClellan AFB. This extraction system must have adequate air spaces to allow the vapors to be removed from the soil. The 2-phase system is well suited for "tight" aquifers, in that, from aquifers where conventional wells do not produce sufficient volumes of water to use conventional pump-and-treat extraction wells.

POINT OF CONTACT:

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Fax: (916) 643-0827

Go to: [Technology Index] [Technology Fact Sheets] [EM Home Page]

Updated by Catherine Martin, EPIC Program.

EM Webmaster: [ *petty.bo@sma1.mcclellan.af.mil*]
Environmental Management Directorate, USAF
5050 Dudley Blvd., Suite 3, McClellan AFB, California 95652-1389

EnvirSense

A Fact Sheet from the EPIC Alliance: Two Phase Extraction System Demonstrated at McClellan

EPIC Greensheet
Fall 1994, No. 14
This is a fact sheet produced by the EPIC alliance.

Environmental Process Improvement Center

Council:

McClellan AFB
U.S. EPA, Region 9
Cal-EPA

EPIC is the Environmental Process Improvement Center, an alliance between McClellan Air Force Base, the U.S. Environmental Protection Agency, Region 9, and Cal-EPA to promote effective environmental protection through innovative management, education, communication and action.

Two-Phase Extraction System Demonstrated at McClellan

McClellan Air Force Base (AFB) is applying a new technology called 2-PhaseTM extraction, an innovative technique for remediation of low-permeability formations where volatile organic compounds (VOCs) are present in soils and groundwater. 2-PhaseTM uses a high vacuum to remove contaminants from above and below the water table simultaneously. The name comes from the two phases of contaminants the system extracts: both aqueous phase (in the groundwater) and vapor phase (in the soil vapor above the water table).

During preliminary testing, 2-PhaseTM has proven to be highly efficient at removing contamination and preventing polluted groundwater from migrating offbase. The novel system can also increase groundwater flow in low-yielding wells and extract contaminants from the soil vapor at the same time. The 2-PhaseTM system cuts cleanup costs by an order of magnitude, simplifies the extraction of both contaminated water and vapor, and shortens remediation times. The system works best in low permeability soils in wells screened across the water table. If wells have already been installed, the 2-PhaseTM extraction system can be easily retrofitted into the existing well.

Background

At a depth of 100 to 110 feet below ground surface, groundwater contaminated with chlorinated solvents and Freonþ from a former plating shop was migrating slowly toward a primary water supply well at McClellan AFB. Prior to demonstrating the 2-PhaseTM extraction system, McClellan installed a Pump and Treat extraction system in the southwest portion of the base and a Soil Vapor Extraction (SVE) system in the northwestern section. In Figure 1, these techniques are compared to

the 2-PhaseTM system.

The Pump and Treat groundwater extraction system, consisting of two extraction wells (EW 233 and 234) and a carbon treatment system, had been installed to contain the plume before it reached the supply well. However, the EWs proved to be low producers: one well averaged only 1.4 gallons per minute (gpm), and the other averaged about 3.5 gpm while it was operating. Together they removed only 120 lbs of contaminants per year. One of the EWs was also eventually shut down due to low flow rates. Although Pump and Treat serves a critical purpose by containing contaminated groundwater on base, as a treatment process it is slow and expensive.

SVE, on the other hand, is effective and regularly implemented at McClellan. A remediation technology designed to treat only soil vapor, SVE uses a relatively low vacuum to draw out the air from between soil particles, which literally strips the VOCs out of the soil. The extracted contaminants are then destroyed in a treatment system. In the first few months of use alone, SVE removed more pounds of VOCs than the groundwater treatment plant had since its installation eight years ago. One limitation of the SVE system, however, is that it cannot be used below the groundwater table, resulting in the need for another technology to treat the groundwater. To date, the traditional method has been Pump and Treat.

2-PhaseTM Process

Taking SVE a step further, 2-PhaseTM extraction offers an alternative to Pump and Treat by targeting both the soil vapor and the groundwater. The 2-phase system applies a vacuum through a specially sized and positioned extraction tube. The tube is installed within a four to six-inch well or a modified conventional recovery well. A high vacuum (18 to 25 inches of mercury at the source) is used to remove groundwater by entrainment into the flow of recovered soil vapors, supplemental atmospheric air, or a combination of the two.

Groundwater and soil vapors drawn into the well by the vacuum are removed from the well casing through the extraction tube. The vacuum causes vapor to be drawn into the tip of the extraction tube at high enough velocity to entrain water and convey a water/vapor spray up the tube and to the surface. This in turn increases the soil vapor and groundwater flow from the formation by enhancing pressure gradients. The increased flow also means the extraction well doesn't need to be turned off because of dry conditions, thus increasing its effectiveness in containing migration.

The vapor and water phases are separated at the surface in a knock-out tank prior to treatment. The turbulence caused as the entrained groundwater moves up the extraction tube has been reported to effectively transfer more than 90% of the VOCs from the water to the vapor phase; the separated water phase then only requires carbon polishing before discharge. The contaminated soil vapor can be more efficiently treated than the liquid phase.

Demonstration

A demonstration of 2-PhaseTM extraction is underway at McClellan as part of the US EPA Superfund Innovative Technology Evaluation (SITE) program and McClellan's Public/Private Partnership. McClellan is partnered with seven private companies, including Xerox, Dow, AT&T, Monsanto and Southern California Edison, to share comprehensive cost and performance data.

The 2-PhaseTM extraction demonstration focuses on EW-233, a well located in the southwest portion of the base. This well was converted from a standard Pump and Treat well and is the primary focus of the demonstration, since it captures relatively high levels of contaminants from a groundwater plume with a source nearby. A second converted extraction well also located in the same area, EW-234, is being investigated only as a secondary objective since it is located away from the main plume area2-PhaseTM system is skid-mounted and connected to existing wells and piping (see Figure 2).

The base's southwest area encompasses approximately 325 acres and has historically contained storage yards, warehouses, a chemical laboratory, an aircraft fueling area, a woodshop, an instrument repair facility, a painting facility, two industrial waste treatment plants, and a plating shop. Materials handled at various locations within the area include solvents, dimethyl ether, low-level radioactive wastewater, and waste chemicals generated during plating activities. The soil and groundwater in the area contain significant concentrations of trichloroethane (TCE), tetrachloroethane (PCE), and Freon 113. Measured groundwater concentrations range from 37 parts per billion (ppb) to nearly five parts per million (ppm), and measured soil gas concentrations range from 220 ppb to 11 ppm.

The demonstration began in July 1994 and will extend to February 1995. The primary objectives of this demonstration are:

1. to determine the mass removal of target VOCs from EW-233; and
2. to determine the percent transfer of those target VOCs from the groundwater to the vapor as the water is vacuumed up through EW-233's extraction tube to ground level.

Baseline groundwater samples were collected just prior to system startup. During operation, several process variables are being monitored, and water and vapor samples are being collected for analysis. Water level and soil vacuum are also being measured in wells and specially constructed piezometer nests surrounding EW-233 to determine the zone of influence of the 2-PhaseTM extraction system. Other information is also being collected to evaluate the performance and cost of the system, which so far has fallen below 5% of the cost per pound to remove contaminants using Pump and Treat technology.

Benefits

Pilot-scale test results indicate 2-PhaseTM extraction is effective in the low permeability silts at McClellan AFB (see Figure 3):

- The groundwater flow rate and the radius of influence increased to twice that of the Pump and Treat system.
- The mass of contaminants removed increased to more than 1,200 lbs per year, twelve times more than the Pump and Treat rate. Early results of the demonstration test indicate the potential for even higher removal rates: 4,000 to 8,000 lbs per year.
- Up to 95% of the groundwater VOCs were transferred to the vapor phase, where they could be treated more easily.

[Figure -- refer to source document]

- Estimates indicate that 2-PhaseTM extraction will reduce remediation costs by an order of magnitude, from $1,370 to $70-$160 per pound.

Conclusion

Installation of the 2-PhaseTM extraction system at other McClellan sites will be relatively easy. Areas with soil conditions of low air permeability and water tables at depths of approximately 100 feet are good candidates. Most of McClellan's targeted sites match these soil characteristics, so the potential for widespread use of 2-PhaseTM onbase is great. If success continues, McClellan should meet its goals of increasing the contaminant removal rate, containing groundwater on the base, and removing sources of groundwater contamination.

References

Appendix C

Procedures for 2-Phase Extraction Pilot Test

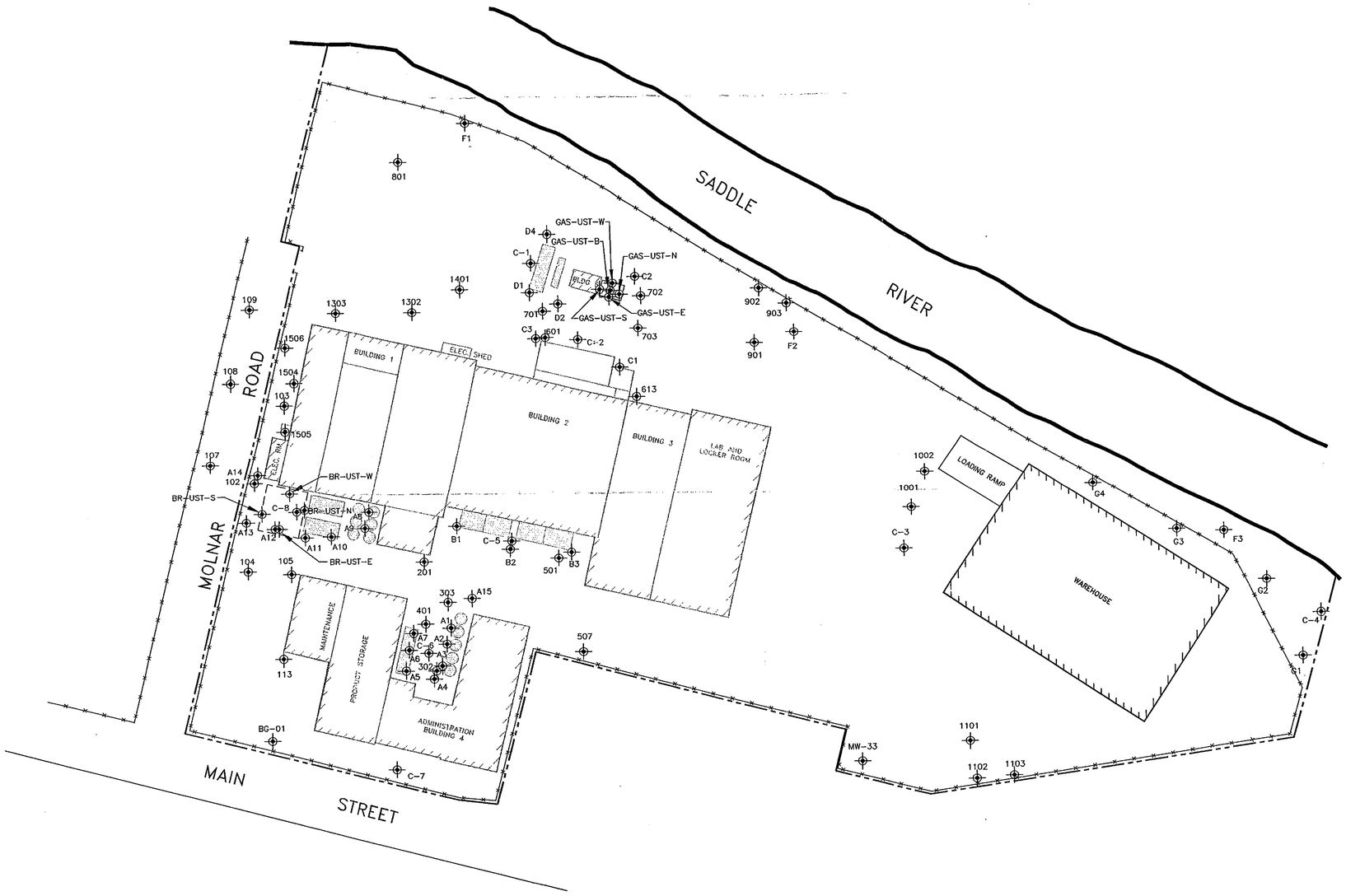
Pilot Test Procedures

A pilot test was performed at the southeast corner of the site (AOC-1A) to evaluate viability of 2-Phase vapor extraction as a remediation technology at the site. Information collected during the pilot test was used to estimate the contaminant removal rate that could be achieved by the 2-Phase system. The southeastern portion of the site was chosen because of the elevated concentrations of methylene chloride in the groundwater, the thinning of the confining layer protecting the deeper aquifer, and the proximity to nearby residential homes.

The pilot test was performed by utilizing a VAC truck to apply a vacuum to a well with an extraction tube installed in the well. The pilot wells were fitted with a vacuum gauge at the wellhead and in the well bore to record pressure conditions. Additionally, selected wells adjacent to the pilot well were fitted with vacuum gauges and groundwater level monitoring devices to evaluate the zone of influence from the applied vacuum. Samples of vapor and groundwater were collected and analyzed for volatile organics (VOs) to estimate the amount of contaminants recovered during the test. The pilot test was performed on two wells (CW-5 and MW-17) at the southeast corner of the site. During each of the tests, the following data were collected:

- System vacuum and pressure conditions including source vacuum supply, vacuum at well head, and vacuum in well bore (annular space).
- Extraction well vapor flow rate and air use.
- Subsurface vacuum conditions and groundwater level conditions at selected adjacent wells.
- Vapor concentration measured at the 2-Phase system discharge.
- Volatile organic concentrations (VOCs) at the pilot wells prior to the test.
- VOCs of a groundwater sample collected from the collection tank on the vacuum truck.

The results of the pilot test indicate that extremely high contaminant extraction rates can be achieved with the 2-Phase system at the southeast corner of the site. During the pilot test on well CW-5, approximately 13.5 pounds of contaminates were recovered from the subsurface over a time period of 110 minutes. This extraction rate is about 40 times more efficient that a typical pump and treat technology. The results of the pilot test are provided in Section 9.2 of this Remedial Action Workplan Addendum.



LEGEND

- PROPERTY BOUNDARY
- FENCE
- FORMER UNDERGROUND STORAGE TANK LOCATION
- SOIL SAMPLE WITH NO VOLATILE ORGANIC COMPOUND ABOVE ANY NJDEP SOIL CLEANUP CRITERIA
- LOCATIONS WITH SOIL SAMPLES EXCEEDING THE IMPACT TO GROUNDWATER SOIL CLEAN UP CRITERIA

NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) SAMPLES WERE COLLECTED AT ONE OR MORE DEPTHS AT EACH LOCATION.

3.) **REFER TO TABLE III IN THE REPORT TITLED "REMEDIAL ACTION WORKPLAN ADDENDUM" DATED NOVEMBER 1999 FOR DETAILS ON SOIL SAMPLE RESULTS.**

4.) BUILDINGS SHOWN IN GRAY ARE FORMER LOCATIONS PRIOR TO DEMOLITION.

15 0 15 30 45

SCALE IN FEET

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
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FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

SOIL SAMPLE LOCATIONS TESTED FOR VOLATILE ORGANIC COMPOUNDS (VOCs)

SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 7

FILE: RESULTS 74187-017

TIERRA-B-012122

REFER TO AREA OF DETAIL FOR SURFACE PCB DELINEATION MAP

NAPP TECHNOLOGIES, INC.

MOLNAR ROAD

SADDLE RIVER

MAIN STREET

BUILDING 1

BUILDING 2

BUILDING 3

LAB AND LOCKER ROOM

ELEC. SHED

BLDG. 6

MAINTENANCE

PRODUCT STORAGE

ADMINISTRATION BUILDING 4

LOADING RAMP

WAREHOUSE

EASEMENT

HA-1, HA-2, HA-3, HA-4, HA-5, HA-6, HA-7, HA-8, HA-9, HA-10, HA-11, HA-12, HA-13, HA-14, HA-15, HA-16, HA-17, HA-18, HA-19, HA-20, HA-21, HA-22, HA-23, HA-24, HA-25, HA-26, HA-27, HA-28, HA-29, HA-30, HA-31, HA-32, HA-33, HA-34, HA-35, HA-36, HA-37, HA-38, HA-39, HA-40, HA-41, HA-42*, HA-43, HA-44, HA-45, HA-46

PCB-1, PCB-2, PCB-3, PCB-4, PCB-5, PCB-6, PCB-7

A10, A11, A12, A13, A14, A15

BR-UST-S, BR-UST-W, BR-UST-TB, BR-UST-N, BR-UST-E

GAS-UST-S, GAS-UST-W, GAS-UST-B, GAS-UST-N, GAS-UST-E

C-1, C-2, C-3, C-4, C-5, C-6, C-7, C-8

BG-01

MW-33

101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113

501, 502, 503, 504, 505, 506, 507, 508

601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613

701, 702, 703

801, 901, 1101

1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308

1401

1501, 1502, 1503, 1504, 1505, 1506

15 0 15 30 45

SCALE IN FEET

AREA OF DETAIL FOR SURFACE PCB DELINEATION

AREA PROPOSED TO BE EXCAVATED TO ELIMINATE EXPOSURE TO SURFACE PCBs

EDGE OF PAVEMENT

FLOOR SLABS PRESENT

BUILDING 1

BASEMENT

0 15

SCALE IN FEET

NOTES:
1.) "●" INDICATES NO SURFACE SAMPLE (BETWEEN 0 AND 3 FEET) WAS COLLECTED AT THE LOCATION.
2.) "*" INDICATES ALTHOUGH SURFACE SAMPLE (< 3 FEET) AT THIS LOCATION WAS BELOW THE 100ppm PCB LEVEL, THE DEEP SAMPLES EXCEEDED THIS LEVEL. THIS LOCATION IS NOT INCLUDED FOR EXCAVATION OF SURFACE PCBs. DEEPER SUBSURFACE PCBs ARE ADDRESSED IN SECTION 7.6 OF THIS RAWA DATED NOVEMBER 1999.

LEGEND

- PROPERTY BOUNDARY
- FENCE
- FORMER UNDERGROUND STORAGE TANK LOCATION
- FORMER ABOVE GROUND STORAGE TANK LOCATION
- SOIL BORING LOCATIONS (1984–1992) TESTED FOR PCB's
- SOIL BORING LOCATIONS (1998 & 1999) TESTED FOR PCB's
- PCBs > 100ppm IN SOIL SAMPLES

NOTES:
1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.
2.) SAMPLES WERE COLLECTED AT ONE OR MORE DEPTHS AT EACH LOCATION.
3.) REFER TO TABLE VI IN THIS REPORT TITLED "REMEDIAL ACTION WORKPLAN ADDENDUM" DATED NOVEMBER 1999 FOR DETAILS ON SOIL SAMPLE RESULTS.
4.) BUILDINGS SHOWN IN GRAY ARE FORMER LOCATIONS PRIOR TO DEMOLITION.

HALEY & ALDRICH
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HEXCEL FACILITY
LODI, NEW JERSEY

SOIL SAMPLE LOCATIONS TESTED FOR POLYCHLORINATED BIPHENYLS (PCBs)

SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 8

TIERRA-B-012123

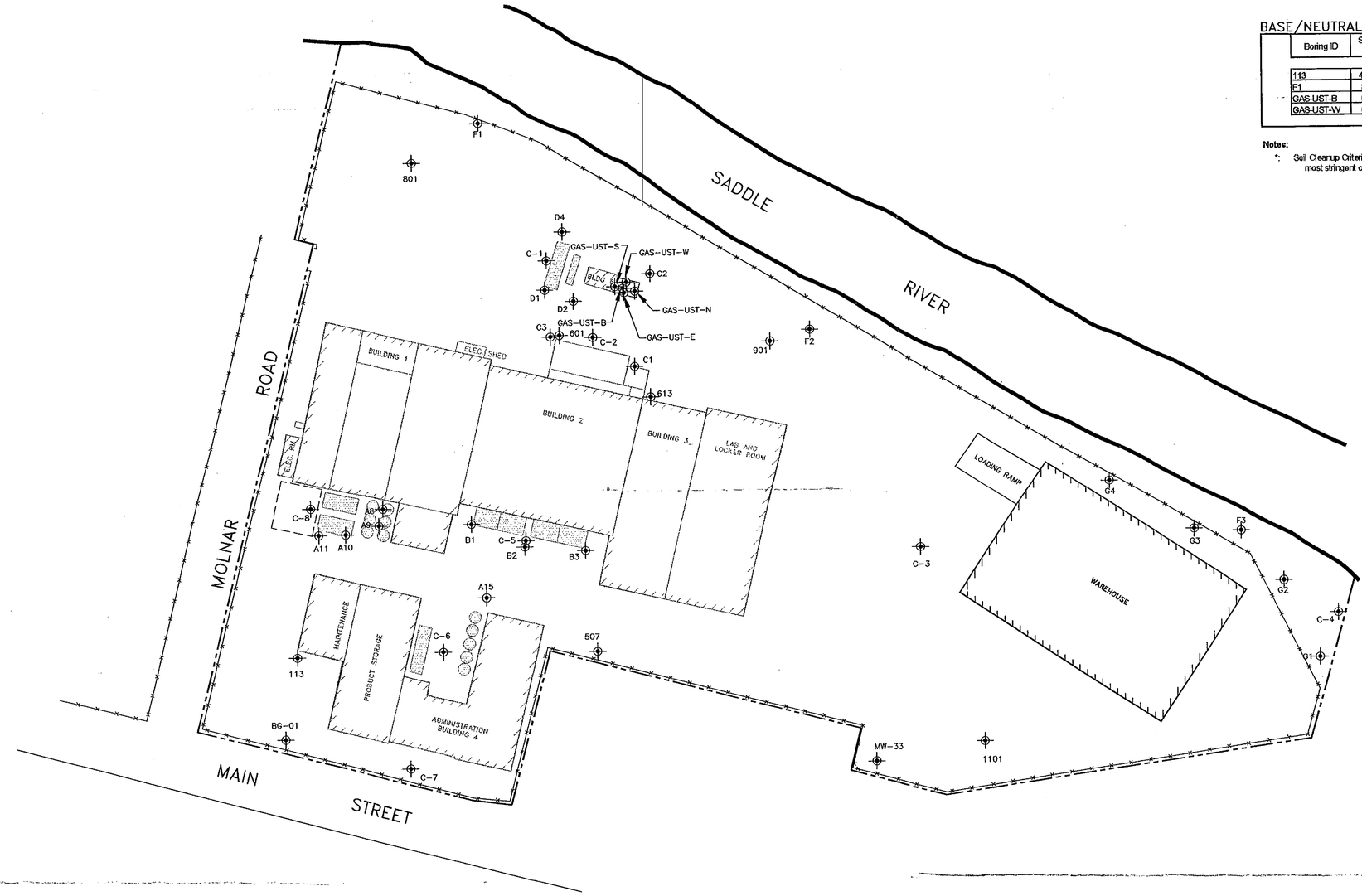
PLS: PENCARY 74137-305

BASE/NEUTRAL AND ACID EXTRACTABLE EXCEEDANCES IN SOIL SAMPLES*

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	RDCSCC (mg/kg)
113	4/20/92	113-003	4.0-5.0	2,6-Dinitrotoluene	1.2	1
F1	8/1/85	F1-44403	1.0-1.0	Benzo(a)anthracene	1.4	0.9
GAS-UST-B	6/1/91	REAR TANK BOTTOM	6.0-6.0	Bis(2-ethylhexyl)phthalate	49.3	49
GAS-UST-W	6/1/91	REAR TANK WEST	3.0-4.0	Bis(2-ethylhexyl)phthalate	55.8	49

Notes:

*: Soil Cleanup Criteria (last revised- 5/3/99). The Residential Direct Contact Soil Cleanup Criteria (RDCSCC) is the most stringent criteria for the BNA parameters.



LEGEND

- PROPERTY BOUNDARY
- FENCE
- FORMER UNDERGROUND STORAGE TANK LOCATION
- SOIL SAMPLE TESTED FOR BASE/NEUTRAL AND ACID EXTRACTABLE ORGANICS
- LOCATIONS WITH SOIL SAMPLES EXCEEDING THE RESIDENTIAL DIRECT CONTACT SOIL CLEAN UP CRITERIA (RDCSCC) FOR ONE OR MORE BNA COMPOUND
- FORMER ABOVE GROUND STORAGE TANK LOCATION

NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) SAMPLES WERE COLLECTED AT ONE OR MORE DEPTHS AT EACH LOCATION.

3.) BUILDINGS SHOWN IN GRAY ARE FORMER LOCATIONS PRIOR TO DEMOLITION.

15 0 15 30 45

SCALE IN FEET

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DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

SOIL SAMPLE LOCATIONS TESTED FOR BASE/NEUTRAL AND ACID EXTRACTABLE COMPOUNDS (BNAs)

SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 9

FILE: RESULTS 74187-017

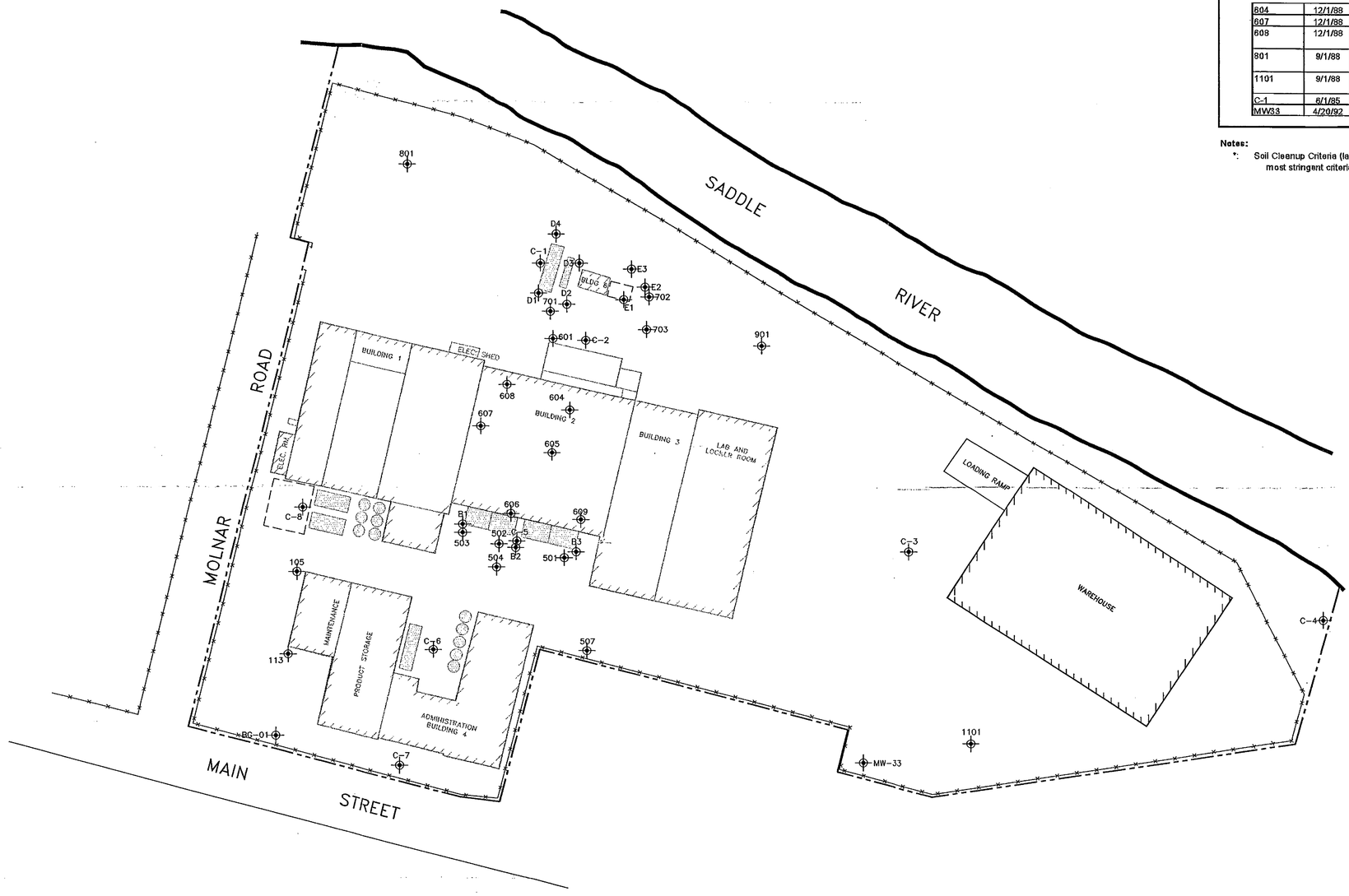
TIERRA-B-012124

PRIORITY POLLUTANT METALS (PPMs) EXCEEDANCES IN SOIL SAMPLES*

Boring ID	Sample Date	Sample ID	Depth (ft.)	Constituent	Concentration (mg/kg)	RDCSCC (mg/kg)
604	12/1/88	536A-0604-SB01	13.5-14.0	Cadmium	2.3	1
607	12/1/88	536A-0607-SB01	13.0-13.5	Cadmium	3.6	1
608	12/1/88	536A-0608-SB01	14.0-14.5	Cadmium	1.9	1
				Mercury	236.0	14
801	9/1/88	536A-0801-SB02	1.5-2.0	Antimony	21.7	14
				Beryllium	2.6	1
1101	9/1/88	536A-1101-SB02	1.5-2.0	Antimony	14.9	14
				Beryllium	1.4	1
C-1	6/1/85	C-1-40317	2.0-2.5	Cadmium	2.0	1
MW33	4/20/92	MW33-008	14.0-16.0	Thallium	2.9	2

Notes:

*: Soil Cleanup Criteria (last revised- 5/3/93). The Residentiel Direct Contact Soil Cleanup Criteria (RDCSCC) is the most stringent criteria for the Priority Pollutant Metals.



LEGEND

- PROPERTY BOUNDARY
- FENCE
- FORMER UNDERGROUND STORAGE TANK LOCATION
- SOIL SAMPLE TESTED FOR PRIORITY POLLUTANT METALS
- LOCATIONS WITH SOIL SAMPLES EXCEEDING THE RESIDENTIAL DIRECT CONTACT SOIL CLEAN UP CRITERIA (RDCSCC) FOR ONE OR MORE METALS
- FORMER ABOVE GROUND STORAGE TANK LOCATION

NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) SAMPLES WERE COLLECTED AT ONE OR MORE DEPTHS AT EACH LOCATION.

3.) BUILDINGS SHOWN IN GRAY ARE FORMER LOCATIONS PRIOR TO DEMOLITION.

15 0 15 30 45

SCALE IN FEET

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

SOIL SAMPLE LOCATIONS TESTED FOR PRIORITY POLLUTANT METALS (PPMs)

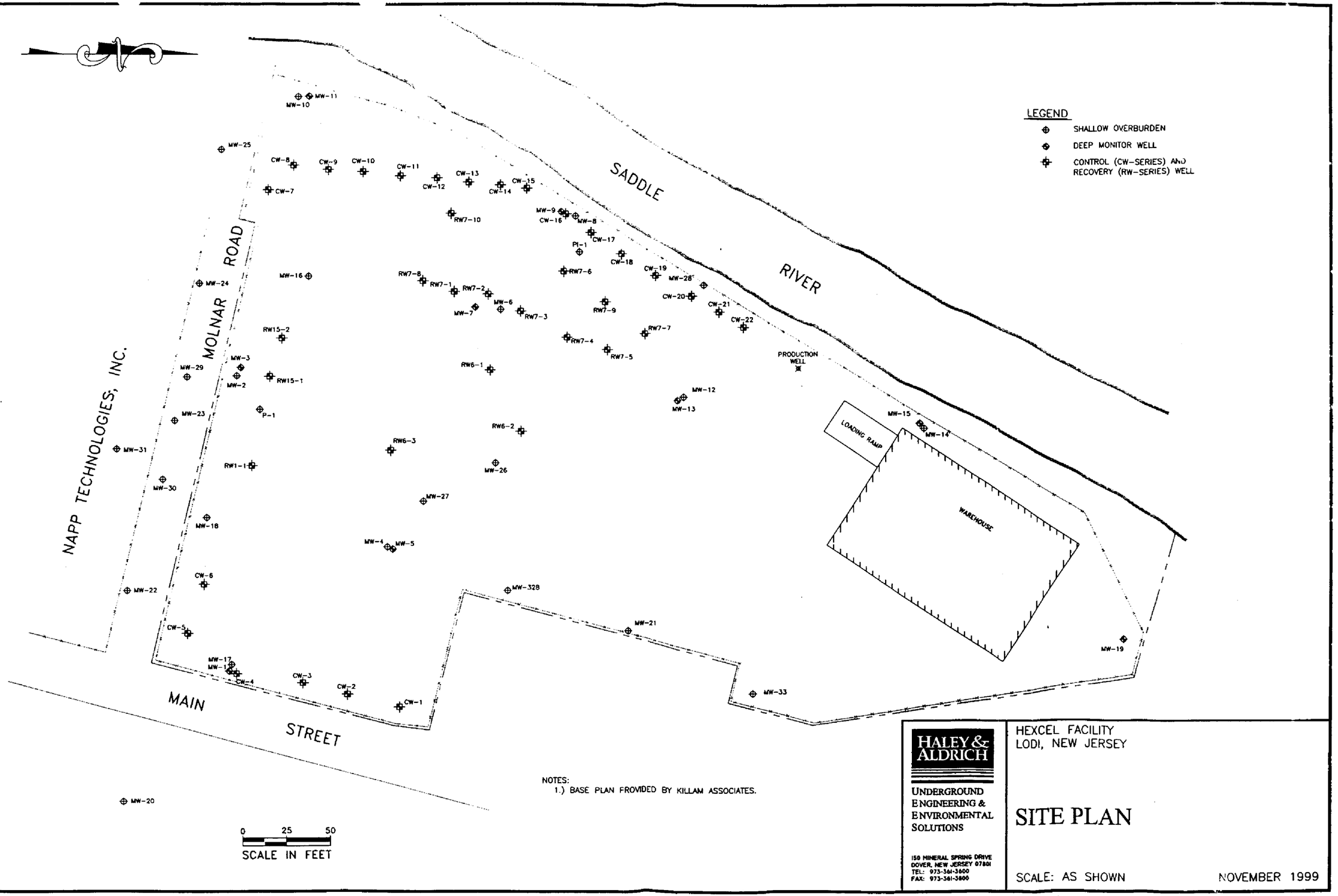
SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 10

TIERRA-B-012125

FILE: RESULTS 74187-017



NOTES:
1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

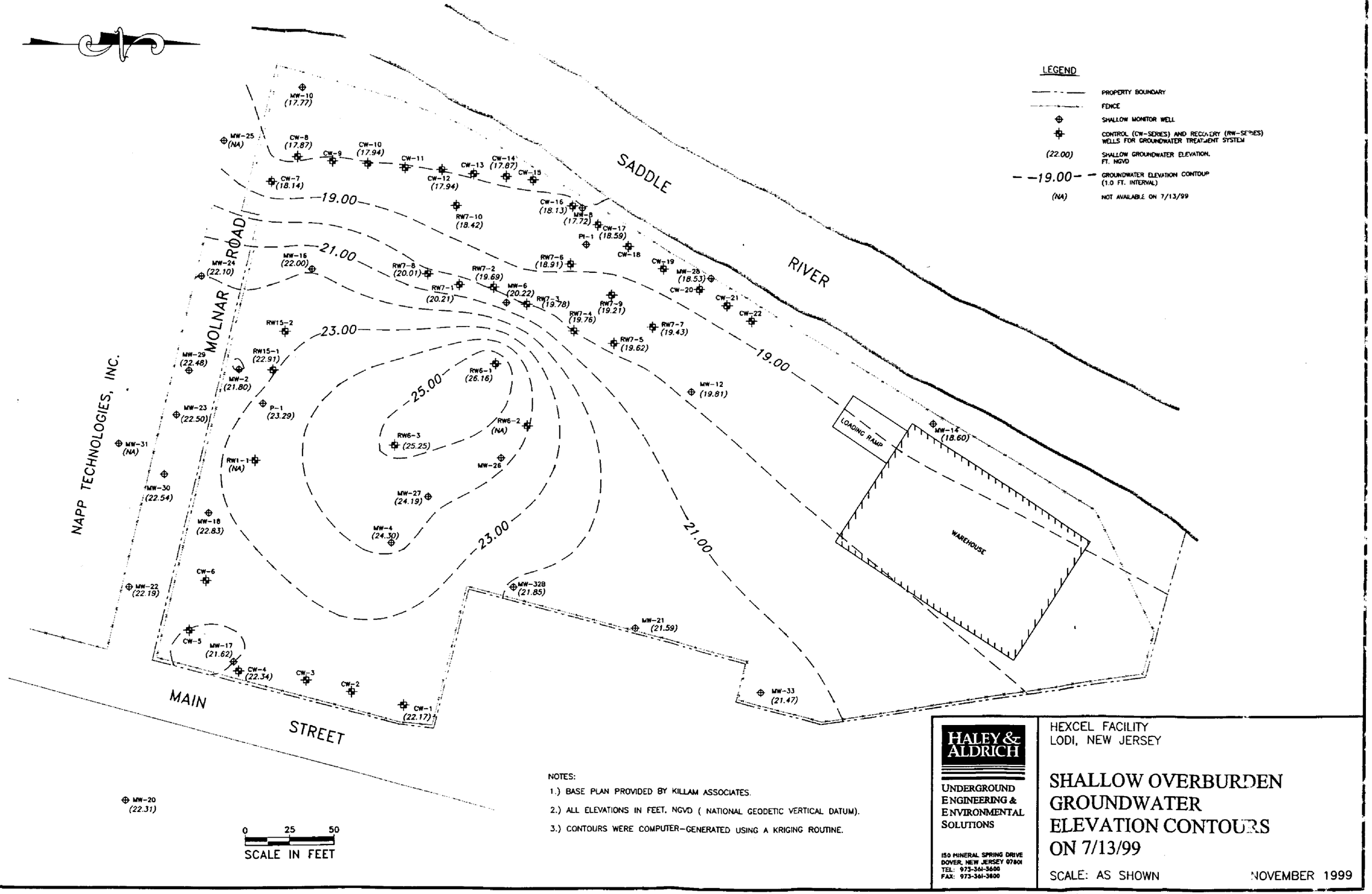
SITE PLAN

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SITEPLAN 74167-017

FIGURE 2



NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) ALL ELEVATIONS IN FEET, NGVD (NATIONAL GEODETIC VERTICAL DATUM).

3.) CONTOURS WERE COMPUTER-GENERATED USING A KRIGING ROUTINE.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3600

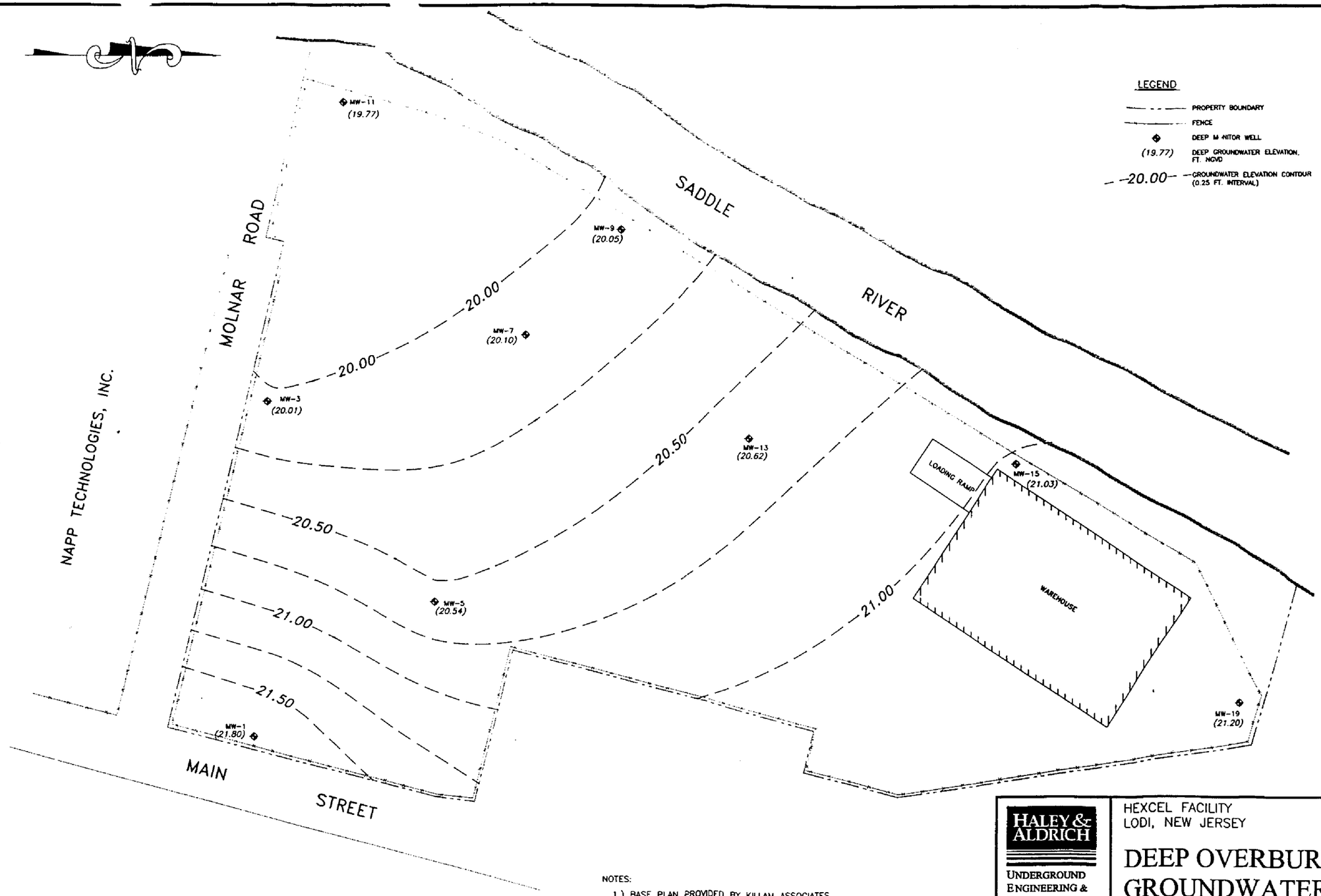
HEXCEL FACILITY
LODI, NEW JERSEY

SHALLOW OVERBURDEN GROUNDWATER ELEVATION CONTOURS ON 7/13/99

SCALE: AS SHOWN NOVEMBER 1999

FILE: SHAL-GWC 74167-004

FIGURE 5



NOTES:

1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

2.) ALL ELEVATIONS IN FEET, NGVD (NATIONAL GEODETIC VERTICAL DATUM).

3.) CONTOURS WERE COMPUTER-GENERATED USING A KRIGING ROUTINE.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

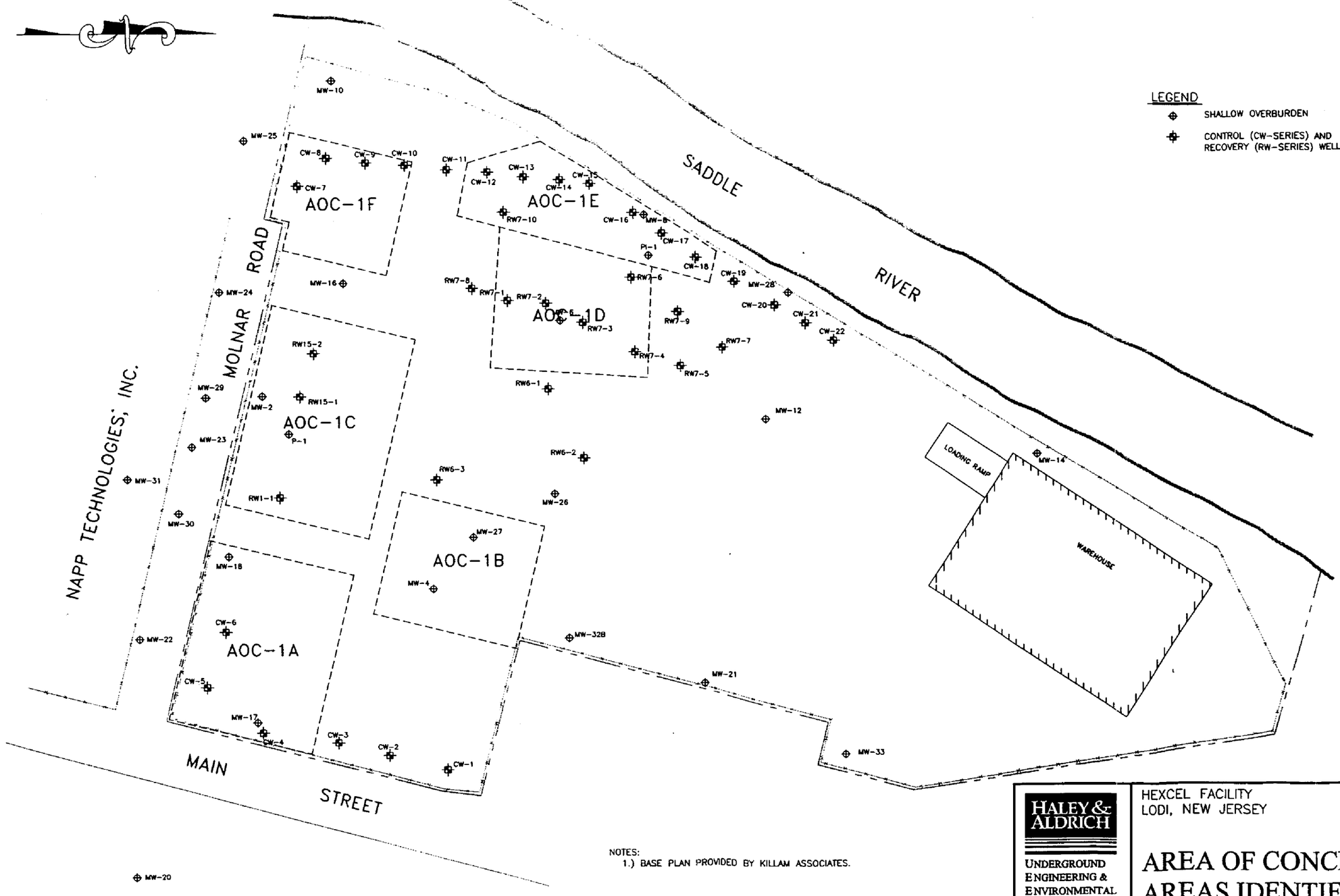
DEEP OVERBURDEN GROUNDWATER ELEVATION CONTOURS ON 7/13/99

SCALE: AS SHOWN

NOVEMBER 1999

FILE: DEEP-GWC 74167-004

FIGURE 6



NOTES:
1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3600

HEXCEL FACILITY
LODI, NEW JERSEY

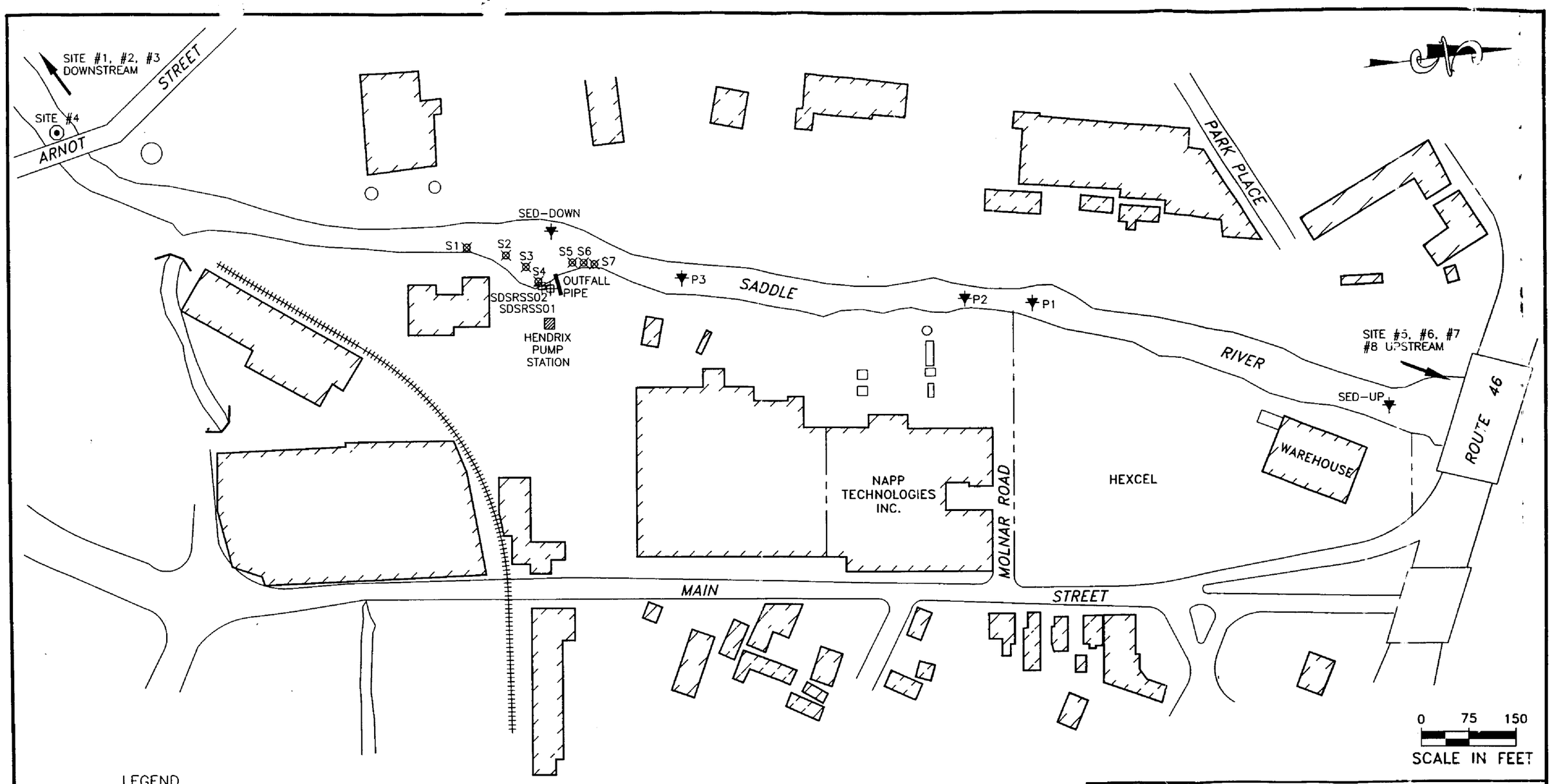
AREA OF CONCERN, AOC-1: AREAS IDENTIFIED FOR 2-PHASE EXTRACTION

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SITEPLAN 74167-017

FIGURE 11



LEGEND

- ⊠ SEDIMENT SAMPLE LOCATION COLLECTED BY HALEY & ALDRICH, OCTOBER 1997
- ▼ SEDIMENT SAMPLE LOCATION COLLECTED BY ENSR, APRIL 1995 AND SEPTEMBER 1996
- ⌖ SEDIMENT SAMPLE LOCATION COLLECTED BY ENVIRON, JUNE 1987
- ⊙ SEDIMENT SAMPLE LOCATION COLLECTED BY ARMY CORPS OF ENGINEERS, DECEMBER 1983

NOTES:

1. BASE PLAN FROM "DELINEATION OF FLOODWAY AND FLOOD HAZARD AREA", BY THE STATE OF NEW JERSEY DEPT. OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES, PLATE NO. 2, DATED FEBRUARY 1986.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

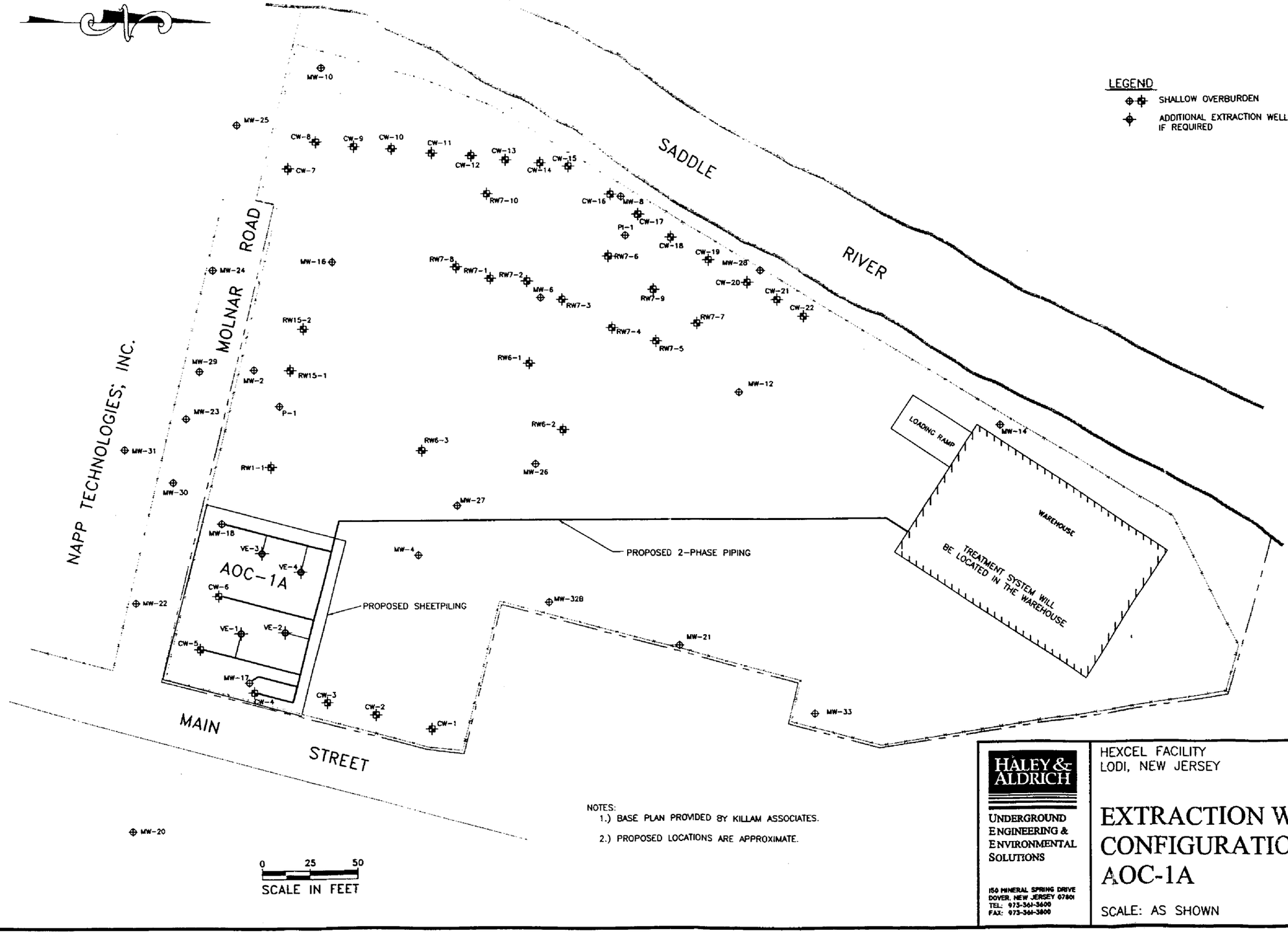
SEDIMENT SAMPLING LOCATIONS

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SEDIMENT 74167-017

FIGURE 12



NOTES:
1.) BASE PLAN PROVIDED BY KILLAM ASSOCIATES.
2.) PROPOSED LOCATIONS ARE APPROXIMATE.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS
150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-3600
FAX: 973-361-3800

HEXCEL FACILITY
LODI, NEW JERSEY

EXTRACTION WELL CONFIGURATION FOR AOC-1A

SCALE: AS SHOWN

NOVEMBER 1999

FILE: SITEPLAN 74167-017

FIGURE 13

2-PHASE
EXTRACTION SKID

TYPICAL
EXTRACTION
WELLS

VAPOR/WATER
SEPARATOR

VACUUM
PUMP

PUMP

PUMP
P-1

F

M

POTENTIAL
DEWATERING
PUMP

M

F
F
FILTER

CONTINGENCY

4000 GAL
HOLDING
TANK

PUMP
P-2

PACKED COLUMN
AIR STRIPPER

AS-2

PUMP
P-3

BLOWER
B-1

PACKED COLUMN
AIR STRIPPER

AS-1

PUMP
P-4

BLOWER
B-2

CONTINGENCY

CONTINGENCY

BLOWER
B-3

OXIDIZER
SYSTEM

CAUSTIC
SCRUB

CONTINGENCY

PERMITTED
AIR
DISCHARGE

M

F
F
FILTER

GAC
#1

GAC
#2

CONTINGENCY

M

PERMITTED
WATER DISCHARGE
TO PVSC

LEGEND

- WATER PIPING
- VAPOR PIPING
- SAMPLING POINT
- M FLOW METER
- F FILTER

FILE: SCHEMATIC 74167-017

HALEY & ALDRICH

UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

150 MINERAL SPRING DRIVE
DOVER, NEW JERSEY 07801
TEL: 973-361-5000
FAX: 973-361-3800

REMEDIAL ACTION WORK PLAN
FORMER HEXCEL FACILITY
LODI, NEW JERSEY

PRELIMINARY 2-PHASE EXTRACTION AND TREATMENT SYSTEM

SCALE: AS SHOWN

NOVEMBER 1999

FIGURE 15

HA-SV-1	7/31/2003
CHLOROBENZENE	2.3
PCBs	ND
TETRACHLOROETHENE	0.3

HA-SV-2	7/31/2003
CHLOROBENZENE	1.4
PCBs	ND
TETRACHLOROETHENE	0.3

HA-SV-3	7/31/2003
CHLOROBENZENE	2.0
PCBs	ND
TETRACHLOROETHENE	ND

HA-SV-4	7/31/2003
CHLOROBENZENE	ND
PCBs	ND
TETRACHLOROETHENE	0.4

HA-SV-5	7/31/2003
CHLOROBENZENE	ND
PCBs	ND
TETRACHLOROETHENE	0.4

HA-SV-6	7/31/2003
CHLOROBENZENE	ND
PCBs	ND
TETRACHLOROETHENE	0.4

HA-SV-7	7/31/2003
CHLOROBENZENE	ND
PCBs	ND
TETRACHLOROETHENE	0.4

HA-SED-1 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	0.15
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	0.26
AROCLOR-1248	0.42
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	3.3
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-2 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	3.2
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-1 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	0.15
CHLOROBENZENE	0.81
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-2 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-3 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	0.46
1,3-DICHLOROBENZENE	0.057
1,4-DICHLOROBENZENE	0.47
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	0.18
CHLOROBENZENE	16
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	0.2
TOLUENE	0.18

HA-SED-3 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	1.4
1,3-DICHLOROBENZENE	0.083
1,4-DICHLOROBENZENE	0.59
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	0.25
CHLOROBENZENE	20
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	0.32
TOLUENE	0.37

HA-SED-4 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	0.071
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	0.073
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	1.8
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-5 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	0.49
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-4 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	0.79
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-5 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	0.28
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-6 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-6 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-7 0-6 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	ND
ETHYLBENZENE	ND
TOLUENE	ND

HA-SED-7 6-12 in.	7/31/2003
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
AROCLOR-1248	ND
AROCLOR-1254	ND
BENZENE	ND
CHLOROBENZENE	ND
CIS-1,2-DICHLOROETHENE	0.16
ETHYLBENZENE	ND
TOLUENE	ND

ENSR_SED-5
ENSR_SW-5
P1
ENSR_SED-6
ENSR_SW-6
STREAM-W2
HA-SED-SW-1
MW-10
HA-SED-SW-2
ST-7
ST-8
ST-9
ST-3
ST-2
ELM_SW-6
ELM_SED-8
ST-1
ST-4
ST-5
ST-6
HA-SED-SW-3
MW-
MW-23
SADDLE
RIVER
RIVER FLOW DIRECTION
HA-SED-SW-4
HA-SED-SW-5
MW-14
LOADING RAMP
WAREHOUSE
ARMY CORPS OF ENGINEERS SITE #5, #6, #7 #8 UPSTREAM
ROUTE 46
SED-UP
HA-SED-SW-6
STREAM-W1
HA-SED-SW-7

HEXCEL FACILITY

LEGEND

- STREAM SOIL SAMPLE COLLECTED BY HALEY & ALDRICH, INC. ON SEPTEMBER 23-24, 1998
- SURFACE WATER SAMPLE COLLECTED BY PRINCETON AQUA SCIENCE JUNE 1985
- SEDIMENT SAMPLE COLLECTED BY ENSR APRIL 1995, SEPTEMBER 1996, OR JULY 1998
- SEDIMENT OR SURFACE WATER SAMPLE COLLECTED BY ELM MARCH 2002
- SEDIMENT AND SURFACE WATER SAMPLE COLLECTED BY HALEY & ALDRICH, INC. JULY 31, 2003
- MONITOR WELL LOCATION
- CHAIN LINK FENCE
- PROPERTY LINE
- APPROXIMATE EDGE OF RIVER

NOTES:

1.) BASE PLAN FROM "DELINEATION OF FLOODWAY AND FLOOD HAZARD AREA", BY THE STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES, PLATE No. 2, DATED FEBRUARY 1986.

2.) BUILDING LOCATIONS ARE APPROXIMATE.

3.) APPROXIMATE LOCATIONS OF SAMPLES COLLECTED BY ENVIRONMENTAL LIABILITY MANAGEMENT, INC. (ELM) AND ENSR PROVIDED BY ELM AND ENSR.

5.) SURFACE WATER RESULTS REPORTED IN UG/L

6.) SEDIMENT RESULTS REPORTED IN MG/KG.

0 25 50 75 100
SCALE IN FEET

HALEY & ALDRICH
ENGINEERING & ENVIRONMENTAL SOLUTIONS

HEXCEL FACILITY
LODI, NEW JERSEY

SEDIMENT AND SURFACE WATER SAMPLE LOCATIONS AND DETECTED RESULTS (JULY 2003): HEXCEL SITE

SCALE: AS SHOWN

OCTOBER 2003

FIGURE 4

FILE: 29756-013.D01 (Hexc/Sedim)
29756801 FIG4, 10/08/2003 09:13:21 AM, ias, 11 x 17, 1:1

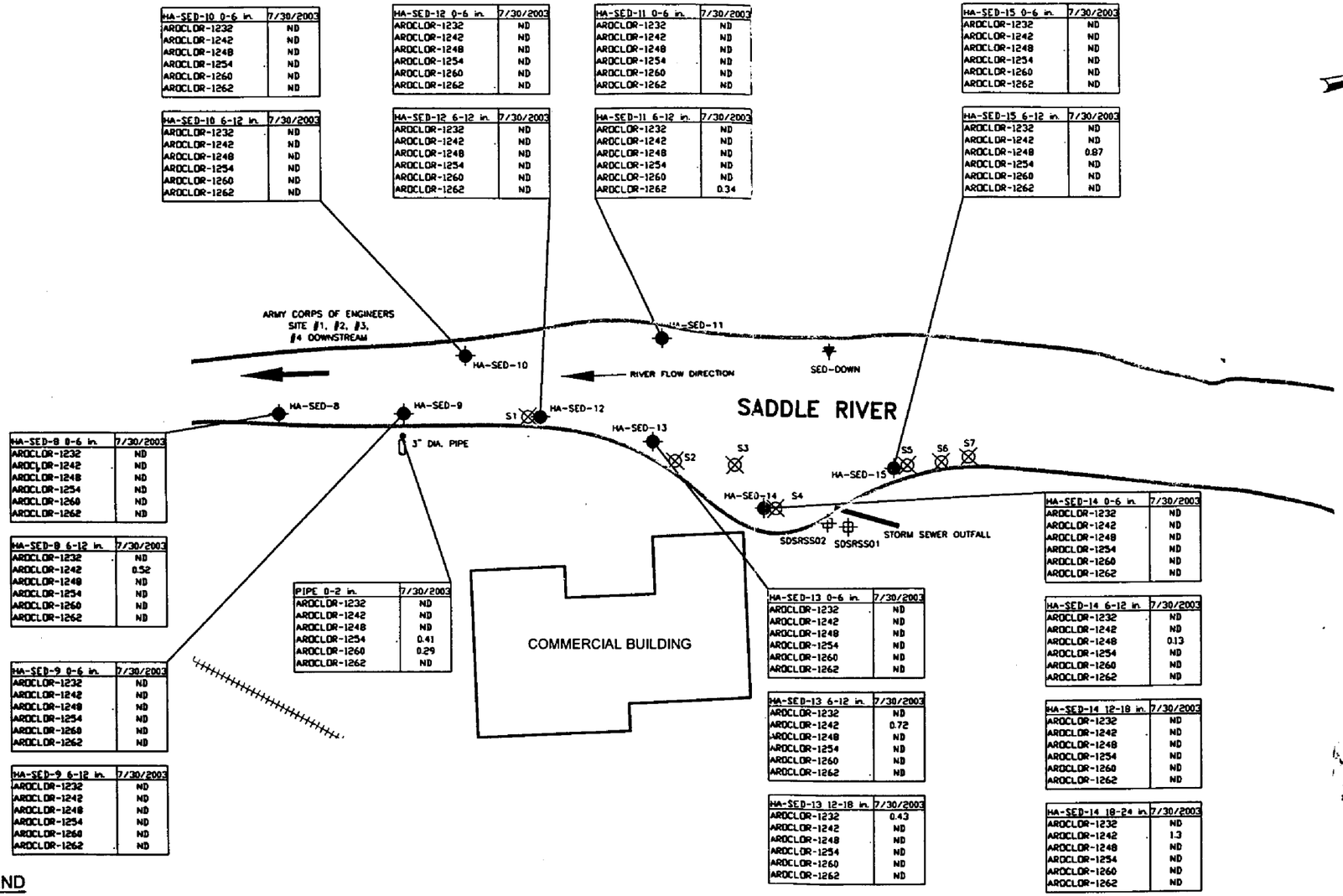
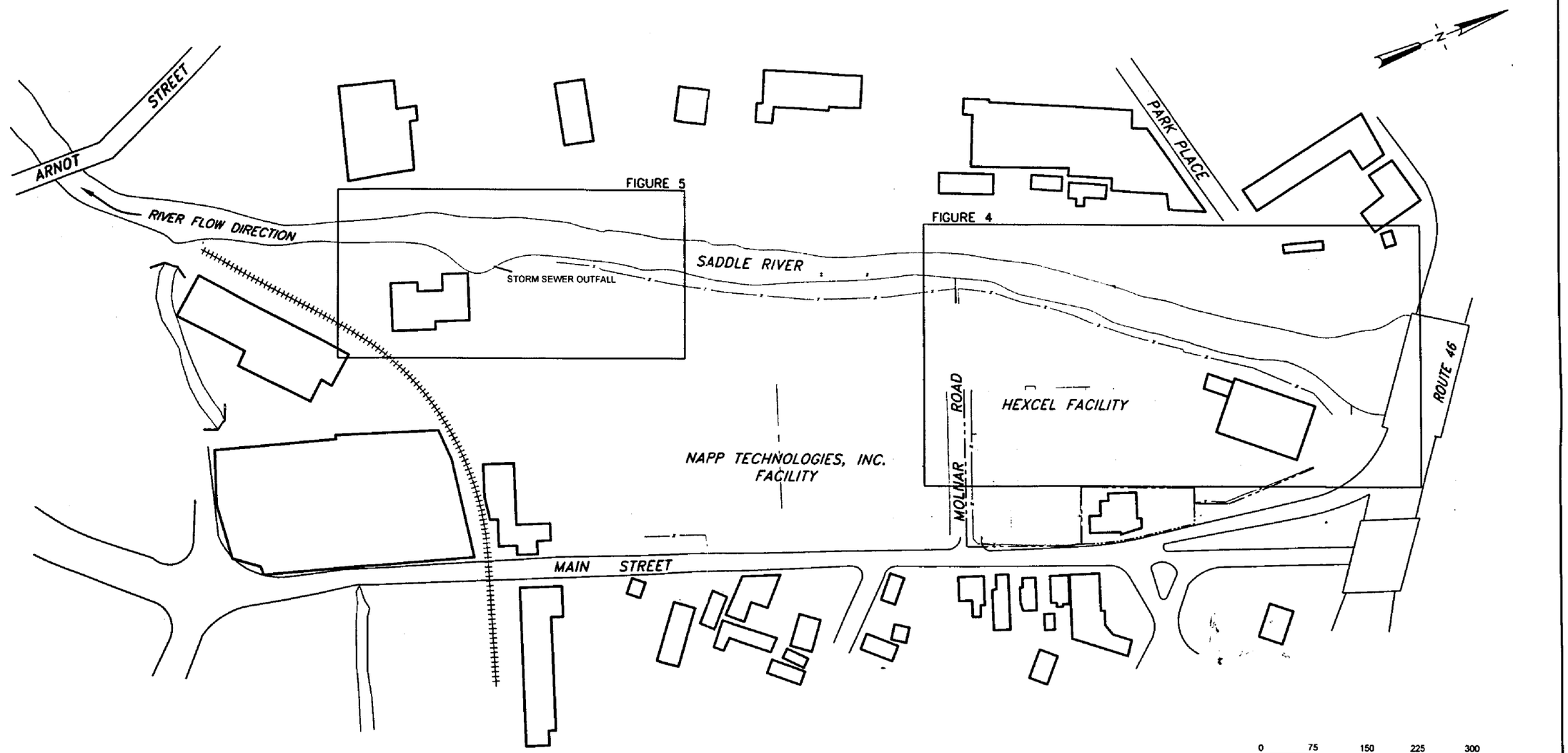


FIGURE 5



NOTES:

1.) BASE PLAN FROM "DELINEATION OF FLOODWAY AND FLOOD HAZARD AREA", BY THE STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES, PLATE No. 2, DATED FEBRUARY 1986.

2.) BUILDING LOCATIONS ARE APPROXIMATE.

3.) FORMER BUILDINGS, INDICATED WITH GRAY LINES, HAVE BEEN DEMOLISHED.

HALEY & ALDRICH
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

HEXCEL FACILITY
LODI, NEW JERSEY

SITE PLAN

SCALE: AS SHOWN

OCTOBER 2003

FIGURE 2

TIERRA-B-012135

29756D01 SitePlan, 10/08/2003 09:12:47 AM, ltw, 11 x 17, 1:1

LILE: 29756-013.D01 (Hexc/Sed'm)

PORZIO, BROMBERG & NEWMAN
A PROFESSIONAL CORPORATION

COUNSELLORS AT LAW
163 MADISON AVENUE
MORRISTOWN, NJ 07960-1997
201-538-4006

TELECOPIER 201-538-5146
TELEX 130-509 (TPBN-LAW-UD)

PORZIO, BROMBERG, NEWMAN & BAUMEISTER
ONE EXCHANGE PLAZA
NEW YORK, NY 10006-3008
212-363-1200
TELECOPIER 212-363-1346

MICHEL F. BAUMEISTER
ROBERT J. BRENNAN
MYRON J. BROMBERG
THOMAS R. CHESSON
ROY ALAN COHEN
LAUREN E. HANDLER
EDWARD A. HOGAN*
ANITA HOTCHKISS
JOHN M. NEWMAN

MOIRA L. BROPHY*
D. JEFFREY CAMPBELL
ALEXANDER J. DRAGO
CHARLES E. ERWAY III
GEORGE J. GROCHALA*

JANE M. HANSON
JEAN SIH LIDON*
MARK W. LYNCH*
KENNETH R. MEYER*
LISA MURTHA
BETH D. POLLACK
RANDI POMERANTZ
ELLEN RELKIN
ELLEN LEWIS RICE*
PETER K. TOMPA*

RALPH PORZIO
OF COUNSEL

*N.J. BAR ONLY
N.J. & N.Y. BARS

October 16, 1987

HAND DELIVERED

Mr. Frank D'Ascensio
Passaic Valley Sewer Commission
600 Wilson Avenue
Newark, New Jersey 07105

Re: Fine Organics Corp.
Lodi, New Jersey

Dear Mr. D'Ascensio:

Enclosed please find a letter from Environ Corporation and a document entitled Summary Report of Preliminary Environmental Sampling of the Fine Organics Facility, Lodi, New Jersey, ECRA Case No. 86009. By copy of this letter, we are also submitting a copy to Mr. Michael Nalbone of the Industrial Site Evaluation Element, New Jersey Department of Environmental Protection. We intend to proceed with the implementation of the remedial measures described in the report as expeditiously as possible. It is important, in the context of the overall site investigation and ultimate remediation of the facility, that the balance of the on-site ECRA investigation commence as soon as possible. We hope that the review of the Sampling Plan will be expedited by the Industrial Site Evaluation Element and that approval will be forthcoming within the very near future.

If you have any questions or need additional information, please do not hesitate to call me.

Very truly yours,

Edward A. Hogan /dtm

Edward A. Hogan

EAH:dtm
(Dictated but not read)
Enclosures

cc: Mr. Michael Nalbone (with enclosures)

BBA000072

ENVIRON Corporation
Counsel in Health and Environmental Science

October 14, 1987

Mr. Frank D'Ascensio
Passaic Valley Sewer Commission
600 Wilson Avenue
Newark, NJ 07105

Re: Fine Organics Corporation, Lodi, New Jersey

Dear Mr. D'Ascensio:

On September 30, 1987, representatives of Fine Organics Corporation (FOC), HEXCEL Corporation, its counsel and consultants (ENVIRON), and the state of New Jersey DEP met with you and your staff to discuss an ongoing investigation of the FOC facility in Lodi, New Jersey under the ECRA program. At this meeting, ENVIRON presented a detailed chronology of the prior environmental sampling and chemical testing that has been conducted at the facility. Our presentation and subsequent discussions specifically focused on the information related to the potential for release of chemical contaminants into the industrial sewer system at the facility, which is part of the Passaic Valley Sewer Commission system. This presentation, and a similar presentation to the NJDEP, has been documented by ENVIRON in a summary report which is attached.

Investigations conducted at the FOC facility to date have included 1) inspection and dye testing of internal plumbing, sewer, and storm drainage systems, 2) collection and chemical analysis of shallow soil samples in and around chemical process areas, 3) collection of water, sediment, and oil samples from the onsite industrial sewer system for chemical analysis, and 4) collection of sediment samples from the industrial sewer offsite (downstream) from the FOC facility to and including the Hendrix pump station. A complete discussion of the findings of these investigations are included in the attached summary report. With specific regard to the industrial sewer system, significant findings of the investigations to date are as follows:

- The industrial sewer system on and downstream from the facility property is substantially clogged with sediments and sludge.

- Chemical testing of sediments from the sewer system indicates that total petroleum hydrocarbons (TPHCs) and PCBs are present in the sediment samples. Concentrations of PCBs range from 10 mg/kg to 7660 mg/kg. In general,

The Flour Mill, 1000 Potomac St., N.W.
Washington, D.C. 20007 • (202) 337-7444

the concentration of PCBs in sewer sediments increases downstream on the sewer system, with the highest concentration reported in the wetwell at the Hendrix pump station.

- Oil has been observed floating in two structures (a manhole and a catch basin) on the industrial sewer on the FOC property. Chemical test of this oil has indicated PCBs at concentrations ranging from 240 to 936 mg/kg.

- The oil observed in the sewer system on the FOC property is currently trapped in these two structures as a direct result of surcharging conditions, i.e., the inlet and outlet pipes of both structures are below the normal water level in the sewer.

- During several inspections of the wetwell at the Hendrix pump station, floating oil has not been observed. This suggests that the oil observed in the sewer system on the FOC property is currently being trapped in the structures and not released downstream.

- In early 1986, a treatment system was installed by FOC to remove oil and any aqueous phase PCBs from water that accumulates in a pit in the process building (building no. 1) at the facility. After treatment, this water has been discharged into the industrial sewer system.

- Upon discovery of oil in the sewer system in December, 1986, and test results obtained in January, 1987, an aggressive program was undertaken to remove oil and to reduce the potential for any offsite release. This program initially included frequent inspection and bailing of oil from the manhole and catch basin on the sewer system, which effectively acted as oil traps. Later, after the flow of oil began to diminish, petroleum absorbent spill pillows were installed in the sewer system to collect any layer of oil that may accumulate. The sewer system has been inspected on a weekly basis and additional spill pillows installed or changed as needed. As an interim measure until the source of the oil can be identified and removed, this program of collecting oil in the sewer has been effective in reducing the potential for offsite releases.

- PCB materials are not currently used in any manner at the FOC facility and PCB contamination from the ongoing operation is not an issue.

During our discussions at our meeting on September 30, 1987, we also described future plans for additional investigations and remediation of PCB contaminated oils at the FOC facility. Oil has been detected in the saturated zone beneath the boiler room at the FOC facility. While the direct connection between the soil beneath the boiler room and the industrial sewer system is not apparent, this oil, to the best of our present knowledge, is the only potential onsite source identified to date that might cause the oil accumulation in the onsite sewer system. A system of underdrains, to lower the water table and collect oil in this area, is currently under design. It is anticipated that the design of this system will be completed within the next few weeks.

Water that is collected from the underdrain system and ground water seepage into the pit in building no. 1, will be treated to remove any oil and aqueous phase PCBs. The current treatment system is comprised of a dual-stage, diatomaceous earth and granulated activated carbon filter. A reevaluation of the treatment system is being conducted as part of the ongoing design.

In accordance with our discussions on September 30, 1987, the treated seepage from this pit, or any subsequent ground water collected from beneath the boiler room, will be discharged into the sewer system only after testing and a finding of no PCBs above laboratory detection limits. Beginning September 30, 1987, all effluent from this treatment system has been stored onsite in a tank. The effluent in the tank will be tested by a NJDEP certified chemical laboratory for PCBs before it is discharged. Discharge of this effluent into the sewer will be through the permitted PVSC outfall.

This treatment and discharge system will be conducted in a "batch mode" and will occur only as frequently as is necessary to empty the effluent storage tank. Records of discharges will be maintained at the facility and will be provided to you at your request. The frequency of this discharge may vary depending upon rainfall and ground water seepage conditions. All chemical analyses of water discharged from the effluent storage tank will be retained by FOC at the facility and will be made available to PVSC or NJDEP at their request.

It is our understanding that the continued operation of this treatment system may require an amendment to the current sewer discharge permit for the FOC facility. We will continue to work with you and your staff in order to clarify any permit requirements.

The investigations of the source of oil at the facility, which is observed to be accumulating in the sewer system, will continue. HEXCEL Corporation is currently negotiating with a PCB response

contractor to begin remedial work at the facility. It is expected that these negotiations will be completed by the end of October, 1987. Further investigations and remedial work will then be undertaken to identify the source of this oil and eliminate the release into the onsite sewer system. These investigations will initially involve 1) isolation and pumping of water and sediments from the sewer manhole and catch basin, in which oil has been observed to be accumulating, 2) inspection of these structures for any inflow pipes which may be a source of this oil, and 3) potentially additional dye testing or remote tracing of undocumented pipe systems to determine their origin. In addition, borings will be constructed in the vicinity of the sewer system in the rear property to determine if the ground water in this area may be a source of the oil through sewer infiltration.

If a source of the oil in the sewer is identified, immediate steps will be taken to terminate the release. These might include installation of temporary plugs in any pipe which is shown to be transporting oil to the sewer system or installation and operation of a recovery system to remove oil from ground water, if appropriate. As previously described, a ground water and oil recovery system will be installed in the vicinity of the boiler room, although it is unclear, based on current information, whether this will totally eliminate the accumulation of oil in the sewer. It is expected that these additional remedial measures will be completed as expeditiously as possible. Based on current estimates we expect that these measures will be in place by December, 1987.

In the interim period, the inspection of the sewer and installation of petroleum absorbent spill pillows will continue. In order to ensure that this program effectively reduces the potential for offsite release, the inspection period will be increased from the prior weekly interval to daily inspections. A log of the inspections will be maintained at the facility. Any changed conditions in the sewer system (e.g., the rate of oil accumulation) will be immediately reported to the facility operations manager and appropriate additional steps such as manual bailing of oil, installation of additional petroleum absorbent materials and downstream testing will be undertaken.

During our meeting on September 30, 1987, you requested that aqueous samples be obtained from the sewer system to demonstrate that no aqueous phase PCBs are currently being released. On October 6, 1987, ENVIRON collected a water sample for analysis of PCBs from manhole M1, which is the manhole farthest downstream on the FOC property on the industrial sewer system. In addition, a sample was collected from the industrial sewer outfall at the Hendrix pump station for PCB analysis. These samples were submitted to Century Environmental Laboratories for analysis. On October 12, 1987 the

laboratory verbally reported to ENVIRON that both samples were "not detected" for PCBs. A written report of these analyses should be available within approximately one week.

In the future, in order to more closely monitor the potential for release of any PCBs into the sewer, aqueous samples will be collected from manhole M1 and the Hendrix pump station on a monthly basis. These samples will be analyzed for PCBs. All laboratory reports of these analyses will be retained at the FOC facility and provided to you at your request. These results will be routinely reported to you in a brief letter. This program of monthly testing of the sewer system will continue until the source of oil accumulating in the sewer at the FOC facility has been identified and eliminated.

I hope this information responds to your concerns and information needs as expressed during our meeting on September 30, 1987. HEXCEL and FOC are committed to expediting the investigation and resolution of the accumulation of these materials into the sewer system. This work is proceeding in advance of the balance of the ECRA investigation at the facility, which should begin within the next few months. We felt, however, that the need to control and eliminate the accumulation of these materials in the sewer sytem was of sufficient concern and urgency that this work should proceed while the balance of the ECRA investigation is under review by the NJDEP.

We look forward to continuing to work with you and your staff toward the successful resolution of these issues. We will continue to keep you informed of our progress with regard to work on the industrial sewer system.

Very truly yours,

Robert L. Powell

Robert L. Powell, Ph.D., P.E.
Project Manager

RLP:slh
1856H

Enclosure

cc: Michael Nalbone, NJDEP

Forwarded to Geology 10-21-87
to EERA 10-21-87

SUMMARY REPORT OF PRELIMINARY ENVIRONMENTAL SAMPLING OF THE FINE ORGANICS FACILITY, LODI, NJ ECRA Case No. 86009

SUMMARY REPORT OF PRELIMINARY ENVIRONMENTAL SAMPLING AT THE FINE ORGANICS CORPORATION FACILITY, LODI, NJ ECRA Case No. 86009

Prepared for

HEXCEL Corporation
Dublin, California

Prepared by

ENVIRON Corporation
Washington, DC

October 14, 1987

C O N T E N T S

I. INTRODUCTION

I. INTRODUCTION

The purpose of this summary report is to discuss the preliminary findings from the chemical testing of environmental samples from the Fine Organics Corporation (FOC) facility in Lodi, New Jersey. These preliminary findings were presented and discussed with the State of New Jersey, Department of Environmental Protection, Industrial Site Evaluation Element (ISEE) during our meeting on September 2, 1987. This summary report is prepared at the request of the ISEE and documents the limited environmental sampling and chemical testing that has been conducted by ENVIRON at the site since the submission of the ECRA-2 Site Evaluation Submission in April 1986.

The work described in this report primarily relates to investigations of oil and PCB contamination at the facility. These investigations have in part been incorporated into the revised ECRA Sampling Plan which was submitted to the ISEE. This Sampling Plan is currently under review by the ISEE and final approval will hopefully be forthcoming in the near future. Over the past several months ENVIRON, at Hexcel's direction, has conducted certain investigations of the nature and potential for contamination from oil in the industrial sewer systems at the facility. This work by ENVIRON was conducted in accordance with the procedures and requirements of the New Jersey Environmental Cleanup Responsibility Act (ECRA).

This summary report of our preliminary findings is prepared to document the limited investigations by ENVIRON at the facility to date. The more substantial investigations to be conducted under the Sampling Plan will provide additional data that describe the nature of any additional chemical contamination at the facility. ENVIRON's preliminary conclusions presented herein, therefore, are subject to review and possible revision as these new data become available.

II. CHRONOLOGY OF ENVIRONMENTAL SAMPLING

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To understand the basis for the ongoing environmental testing, a brief chronology of the prior sampling at the facility and the status of the ECRA process for the facility is needed. The facility became subject to the requirements of ECRA upon its sale from Hexcel Corporation (the former owner) to Fine Organics Corporation (the current owner). The ECRA investigation is being conducted under an Administrative Consent Order, dated March 26, 1986.

A. Investigations Preceding the ECRA-2, Site Evaluation Submission

The initial environmental testing at the facility began in 1984 when limited soil borings were constructed by TenEch Environmental Engineers, Inc. around two underground fuel oil tanks. Chemical tests of soil samples from these borings indicated the presence of fuel oil, report as "oil and grease". Oil was generally found beginning at the water table (approximately four feet below ground) and to a maximum depth of eight feet where a clay layer was found. An oil recovery well was subsequently installed and oil recovery operations began.

In June 1985, Princeton Aqua Science (PAS) conducted another limited environmental investigation at the facility. This investigation included shallow soil samples in the vicinity of chemical storage and process tanks and collection of a sample from the oil recovery well for chemical analyses. The results of these analyses are summarized in table 1 and indicated the presence of volatile organic chemicals (VOCs) and total petroleum hydrocarbon (TPHC) in shallow soil and low level PCB contamination (43 mg/kg as Aroclor 1248) in oil from the oil recovery well.

TABLE 1
Summary of Sampling by Princeton Aqua Science
June '85

Sample No.	Matrix	Location	PCBs[1] (mg/kg)	TPHC (mg/kg)
PAS-40317 C1	soil	near ammonia tanks	ND	-
PAS-40318 C2	soil	near UST	ND	92
PAS-40319 C3	soil	drum storage @ bldg. 2	ND	-
PAS-40320 C4	soil	discarded equip. area	ND	-
PAS-40321 C5	soil	drum storage @ bldg. 11	ND	-
PAS-40322 C6	soil	aboveground ST @ office bldg.	ND	-
PAS-40323 C7	soil	background - east of office bldg.	ND	72
PAS-40324 C8	soil	UST leak - bldg. 1	ND	6000
PAS-40311 C10	water	pump house	ND	
PAS-40365 C11	oil	oil recovery well	43	-
PAS-40315 W-1	water	Saddle Brook - upstream	ND	-
PAS-40314 W-2	water	Saddle Brook - downstream	ND	-
PAS-40363	-	sewage swipe - bldg. 11	ND	-

[1] PCBs reported as Aroclor 1248

In August 1985, additional environmental samples were collected by PAS for chemical analyses. These samples were collected to augment the information obtained during the earlier June 1985 investigation by sampling soil at greater depth and collecting additional samples in the vicinity of the underground fuel oil tanks. The results of these analyses are summarized in table 2 and confirmed the presence of VOCs in soil above the water table and indicated that oil in the vicinity of the underground storage tanks (USTs) containing fuel oil was contaminated with low levels of PCBs. The level of PCB contamination was reported to range from 4 to 11.6 ppm in soil samples from the vicinity of the USTs. Oil, water and "wall scraping" samples were collected from the pit inside building no. 1 for analysis of PCBs. These tests indicated PCBs as high as 173 mg/kg in oil floating on water in a drain inside this pit. PCB analysis of the water and the "wall scraping" indicated 0.8 mg/kg and 62 mg/kg, respectively. Lastly, PAS collected an oil and water sample from the oil recovery well for PCB analysis. The oil was reported as 39 mg/kg and the water as 0.06 mg/l of PCBs (Aroclor 1248).

In December 1985, ENVIRON was retained to conduct an environmental investigation at the facility in order to comply with the requirements of ECRA. In preparing the ECRA Site Evaluation Submission, ENVIRON collected limited environmental samples to confirm the prior analyses by PAS. These samples included a floating oil product from the below-ground pit in building no. 1. Chemical tests of this oil indicated PCBs at 9,970 mg/kg (Aroclor 1242). An analysis of a water sample from the same pit indicated no PCBs at a detection limit of 10 µg/l. These results are summarized in table 3.

At ENVIRON's recommendation, in early 1986 FOC installed a treatment system to remove any oil and aqueous phase PCBs in the water from the pit in building no. 1. This treatment system was comprised of a dual stage diatomaceous earth and

TABLE 2
Summary of Sampling by Princeton Aqua Science
August '85

Sample No.	Matrix	Location	PCBs[1] (mg/kg)	TPHC (mg/kg)
PAS-44122 A5	soil	aboveground ST @ office bldg.	-	150
PAS-44123 A6	soil	aboveground ST @ office bldg.	-	100
PAS-44124 A7	soil	aboveground ST @ office bldg.	-	500
PAS-44119 A10	soil	aboveground ST - bldg. 1	ND	3,400
PAS-44121 A11	soil	aboveground ST - bldg. 1	10.2	12,000
PAS-44109 A12	soil	UST leak - bldg.1	11.6	12,000
PAS-44110 A13	soil	UST leak - bldg. 1	ND	5,800
PAS-44111 A14	soil	UST leak - bldg. 1	4.39	150
PAS-44401 A15	soil	drum storage area @ bldg. 11	ND	-
PAS-44189 E1	soil	gasoline - UST - rear of bldg. 11	-	3,600
PAS-44190 E2	soil	gasoline - UST - rear of bldg. 11	-	2,800
PAS-44191 E3	soil	gasoline - UST - rear of bldg. 11	-	1,700
PAS-44129 H1	seepage	wall scraping - bldg. 1 pit	62	-
PAS-44130 H3	floating product	floor water - bldg. 1 pit	173	-
PAS-44130 H3	water	floor water - bldg. 1 pit	0.8	-
PAS-43289	floating product	oil recovery well	39.1	-
	water	oil recovery well	0.06	-

[1] PCBs reported as Aroclor 1248

TABLE 3
Summary of Sampling by ENVIRON Corporation
December '85

Sample No.	Matrix	Location	PCB[1] (mg/kg)
85-1081 A,B,C	water	Pit Bldg. 1	<10 µg/l
85-1081B	oil	Pit Bldg. 1	9970
85-1081C	oil	Pit Bldg. 1	8070

[1] PCBs reported as Aroclor 1242

granulated activated carbon filter. The treated water was discharged into a floor drain which ultimately connected to the industrial sewer system. This treatment system has operated continuously since that time.

All prior chemical analyses of environmental samples by TenEch (June 1984), PAS (June and August 1985), and ENVIRON (December 1985) were included and documented in the ECRA-2, Site Evaluation Submission (SES), which was provided to the ISEE on January 15, 1986. Included in this submission was a discussion of the environmental data collected to that point as a basis for the development of a Sampling Plan, which was subsequently submitted on April 16, 1986, as Appendix 9 of the SES.

B. Investigations Following the ECRA-2, Site Evaluation Submission

During the summer of 1986, while reviewing the SES, the ISEE conducted an inspection of the facility and subsequently requested additional records and information. The ISEE also requested that an investigation be conducted to determine the nature and integrity of sewer drain systems at the facility. This testing was to include either smoke or dye tests and a review of all pertinent records or drawings. In response to this request, ENVIRON, on behalf of HEXCEL, retained the services of a subcontractor (Central Jersey Environmental Services) to conduct the required tests. The testing program was completed in December, 1986. The results of this program were incorporated into a revised Drainage System Plan (Plate 2 of the SES), which was forwarded to the ISEE.

In the course of the testing and investigation of the drainage and sewer systems at the facility, the manhole covers on the industrial sewer system in the rear yard were removed, and the manholes were inspected. Oil was observed to be floating on the water surface in manhole M1, which is located

to the rear of building no. 1. Oil was not observed in the other manholes and structures on the industrial sewer at that time.

On December 30, 1986, the oil in mahole M1 was removed by manual bailing. Approximately 75 gallons of oil and water were recovered and placed in steel drums. Several weeks thereafter, the industrial sewer system was reinspected to determine if additional oil had accumulated. At that time oil was again observed in manhole M1, but again not in the other structures on the industrial sewer onsite. Approximately 30 gallons of oil and water were removed from manhole M1 at that time.

A sample of the oil removed from the manhole in January, 1987 was retained for chemical analysis. Also, samples of oil from the pit inside building no. 1 and the oil recovery well near the abandoned USTs, were collected for chemical analyses. All three oil samples were submitted to JTC Environmental Consultants (JTC) for chemical analyses. These analyses included tests for PCBs, heavy metals, and an infrared spectra analysis for characteristic hydrocarbons, that would identify the petro-chemical nature of each oil sample. The purpose of these chemical tests was to determine if the oil, which was accumulating in the sewer, could potentially be the result of an onsite source common to one of these other two areas. Also at that time, while oil was not observed to be present in the other manholes on the industrial sewer system, ENVIRON had no data nor information that would preclude the potential for an offsite source of this oil in the industrial sewer. The results of these chemical analyses by JTC were provided to the ISEE by letter dated March 27, 1987 and are summarized in table 4.

Chemical tests for PCBs indicated concentrations of 60, 760, and 1085 mg/kg in oil samples from the oil recovery well, manhole M1, and the pit in building no. 1, respectively. The conclusion of the analyses of chemical testing of these three

TABLE 4
Summary of Sampling by ENVIRON Corporation
January '87

Sample No.	Matrix	Location	PCB[1] (mg/kg)
#1 86-0806	oil	Manhole M1	760
#2 86-0807	oil	Recovery well	60
#3 86-0808	oil	Pit Bldg. 1	1085

[1] PCBs reported as Aroclor 1242

oil samples was that the oil from manhole M1 was chemically distinctive and different from the oil samples collected from building no. 1 or the oil recovery well, which by comparison were chemically much more similar.

At ENVIRON's recommendation, Fine Organics Corporation began a program for regular (weekly) inspection of the sewer system for oil accumulation. Oil continued to be removed from manhole M1 as it accumulated by bailing and placing it in drums. This oil was subsequently transported offsite for incineration in accordance with state and federal regulations.

In April 1987, ENVIRON began an investigation at the facility to determine the extent of PCB contamination in the sewer system and in the vicinity of the boiler room in building no. 1. Sludge samples were collected from three structures on the industrial sewer system (manhole No. M3, M4, and M8) and floating oil was collected from M1 and the storm water catch basin in the rear yard (identified herein as structure CB8 which is part of the industrial sewer system). Additional oil samples were collected from drip pans, and sumps in the boiler room and from the pit in building no. 1, and soil and wood chips were collected from the floors in the boiler room. All samples were tested for TPHC and PCBs. The results of these tests were discussed with the ISEE during a site visit by the ECRA case manager (Mr. Michael Nalbone) on May 20, 1987, and are summarized in table 5. The data reports from the laboratory were subsequently submitted to the ISEE by letter dated June 18, 1987.

The results of these analyses indicated that PCBs and petroleum hydrocarbons were present along the main line of the industrial sewer system on the facility property. The concentration of PCBs (Aroclor 1242) in sediments from the industrial sewer ranged from 10 mg/kg to 240 mg/kg, with generally increasing concentrations toward the Hendrix pump

TABLE 5
Summary of Sampling by ENVIRON Corporation
April, 1987

Sample No.	Matrix	Location	PCBs[1] (mg/kg)	TPHC (mg/kg)
536A-MH01-FP01	oil	manhole M1	240[2]	-
536A-MH01-FP02	oil	manhole M1	936[2]	-
536A-MH03-SS01	sediment	manhole M3	150	299430
536A-MH04-SS01	sediment	manhole M4	240	300050
536A-MH08-SS01	sediment	manhole M8	10	17267
536A-MH08-SW01	water	manhole M3	ND	-
536A-CB08-FP01	oil	catch basin in rear yard on sewer system	498	-
536A-BD01-FP01	oil	pit in building no. 1	8630	-
536A-BR01-OIL1	floor scraping	boiler room, around hot oil system	5500	-
536A-BR02-OIL1	oil	boiler room, drip pan under hot oil system	1250	-
536A-BR03-OIL1	oil	boiler room, pit under boiler	1280	-
536A-BR04-OIL1	oil	boiler room, bucket under boiler	ND	-
536A-BR05-OIL1	wood chips	boiler room, elevated wood decking	4100	-

[1]PCBs reported as Aroclor 1248

[2]Sample no. MH01-FP01 and MH01-FP02 are split samples of floating oil

station sewer system. A chemical analysis of water entering the facility from offsite into manhole M8 indicated no PCB at a detection limit of 1.0 µg/l.

Chemical tests of oil and floor scraping samples from within the boiler room indicated the presence of PCB contamination 1) in the vicinity of the decommissioned heating oil system, 2) on an overhead wooden flooring, and 3) within subsurface concrete pits beneath the boilers. In addition, a chemical analyses of oil samples from the pit in building no. 1, manhole M1 and catch basin CB8 reconfirmed the prior findings of PCB contamination in the floating oil product.

During our meeting at the facility with the ISEE on May 20, 1987, at which these test results were discussed, HEXCEL proposed an aggressive program for interim containment of identified onsite PCB contamination, and additional investigations of the extent of PCBs onsite and in the sewer system. The onsite containment program included construction of wooden enclosures and temporary flooring over visibly stained areas within the boiler room; posting of warning signs; restricting worker access in areas where PCB contamination had been identified; briefing of all plant personnel regarding the nature of contamination and appropriate health and safety precautions; retaining of a PCB cleanup/response contractor; and decontamination of the former hot oil heating system.

Secondly, additional sampling and testing for oil and PCBs beneath the boiler room were also proposed. This sampling and testing would involve the construction of three soil borings through the floor of the boiler room, to approximately the elevation of the base of the pit in building no. 1, and two additional soil borings outside the boiler room between the building wall and Molnar Road. These borings would be used to collect soil samples for analysis of TPHCs, PCBs, and selectively, VOCs. In addition, it was proposed that one or more of the borings through the floor of the boiler room would

be completed as small diameter monitoring wells. Due to the low overhead clearance, it was not deemed practical to construct these borings with a motorized power auger drilling rig. This limitation prevented the installation of the normal four inch diameter monitoring well required by the ISEE.

Lastly, additional sampling of sediments from the sewer system downstream (offsite) from the facility was proposed. This included samples from manholes along the sewer system and from the Hendrix pump station, which is located approximately two blocks downstream (south) from the facility. All sediment samples from the sewer system would be tested for TPHC and PCBs. In addition, two sediment samples were proposed to be collected from Saddle Brook in the vicinity of the outfall of the storm drainage system which crosses the facility property. This outfall is located immediately adjacent to the Hendrix pump station.

It was our understanding as a result of our meeting on May 20, 1987 that the ISEE case manager agreed that ENVIRON and HEXCEL should proceed with these additional onsite containment measures and environmental testing programs. An addendum to the ECRA Sampling Plan (Appendix 9 of the SES) was prepared to describe the testing proposed to be conducted in and around the boiler room. This addendum was submitted to the ISEE by letter dated June 18, 1987.

On June 16 and 24-25, 1987, ENVIRON completed this sampling program offsite in the industrial sewer system and onsite in the vicinity of the boiler room. Soil samples were collected in accordance with our discussions during our meeting on May 20, 1987 and the followup written correspondence with one exception. Only two borings (nos. 1502 and 1503) could be constructed within the boiler room. Drill bit refusal occurred in boring no. 1501 at a depth of approximately 5 feet below the floor of the boiler room. At that point, the soil beneath the

boiler room was dry and did not appear to be visibly contaminated. Therefore, no samples were collected from this boring for chemical analyses.

Boring nos. 1502 and 1503 were completed as small diameter (1½ inch ID) PVC monitoring wells. Following construction, water and oil were observed to be inflowing to these wells. The thickness of the oil layer was not determined at that time; an oil sample was, however, recovered from the well casing in boring no. 1502 for PCB analysis. This analysis indicated PCBs at a concentration of 10,940 ppm which is generally consistent with the concentrations that had previously been measured in oil samples within the pit inside building no. 1. Boring no. 1502 was constructed approximately six feet behind the pit wall.

The results of the chemical analyses (see table 6) of the samples collected in the vicinity of the boiler room on June 24-25, 1987 indicated that oil was present on the water table (at a depth of approximately 8 feet beneath the floor) and within the sandy soil that comprises the water table unit. At a depth of approximately 12 feet below the floor of the boiler room, a clay layer was encountered during the drilling. Drilling was halted at this point and did not pierce through the clay. Oil was observed to be present in the sandy sediments overlying this clay up to the water table. Subsequent chemical tests indicated TPHC in the sandy soils ranging from less than 100 ppm to 2,875 ppm and PCBs ranging from less than 3 ppm to 150 ppm. TPHC and PCB concentrations were highest at the water table and decreased with depth. A sample from the top of the clay layer, which underlies the water table unit, indicated much lower concentrations of TPHC (153 mg/kg) and PCBs (14 mg/kg) than in the overlying sandy alluvium.

The sludge and sediment samples collected from the industrial sewer system offsite included a sample from a manhole on the property of Napp Chemical Co., which is

TABLE 6
Summary of Sampling by ENVIRON Corporation
June '87

Sample No.	Matrix	Location	PCBs[1] (mg/kg)	TPHC (mg/kg)
WWHS-SS01	Sediment	Wet well-Hendrix Pump Sta.	7660	85,000
WWHS-SS02	Sediment	Wet well-Hendrix Pump Sta.	1420	64,200
SDSR-SS01	Sediment	Saddle Brook @ storm drain outfall	0.3	980
SDSR-SS01 Dup	Sediment	Saddle Brook @ storm drain outfall	0.3	-
SDSR-SS02	Sediment	Saddle Brook @ storm drain outfall	2.4	18,600
MHNC-SS01	Sediment	Manhole on ind. sewer-Napp Chemical	490[2]	16,675
1502-SB01	soil	Boiler room-bldg. 1 @ 6.0-7.0 ft.	130	2,875
1502-SB02	soil	Boiler room-bldg. 1 @ 11.0-11.5 ft.	51/22.3*	485/70*
1502-SB03	soil	Boiler room-bldg. 1 @ 13.5-14.0 ft.	14	153
1503-SB01	soil	Boiler room-bldg. 1 @ 8.5-9.0 ft.	<20	4,575
1503-SB02	soil	Boiler room-bldg. 1 @ 11.5-12.0 ft.	<3	<100
1504-SB01	soil	Outside south wall-boiler room @ 3.5-4.0 ft.	26	<100
1505-SB01	soil	Outside south wall-boiler room @ 4.0-4.5 ft.	150	847
1502-FP01	oil	Boiler room-bldg. 1	10,940	-

*Split Sample

[1]PCBs reported as Aroclor 1248

[2]PCBs reported as Aroclor 1260

immediately south of the FOC facility across Molnar Road, and two samples from the wetwell at the Hendrix wastewater pump station. The samples at the pump station were collected immediately in front of the industrial sewer and sanitary sewer outfalls upstream from the trash bar and were comprised of sediments from the bottom of the wetwell.

The results of the chemical analyses of these samples indicated that PCBs are present within the sediments in the industrial sewer system down to and including the Hendrix pump station. The PCB detected in the sediment sample from the manhole on the Napp Chemical Co. property was identified as Aroclor 1260, which is distinctly different than the Aroclors (1242 and 1248) which have been detected in previous samples at the FOC facility. The concentration of PCBs in this sample was higher (490 mg/kg) than concentrations detected in onsite (FOC) sediment samples from the industrial sewer system. Both sediment samples from the Hendrix pump station wetwell contained PCBs. The sediment sample at the outfall of the industrial sewer system was reported as 7660 mg/kg and the sample at the outfall of the sanitary sewer at 1420 mg/kg. Both samples reported Aroclor 1242.

During the collection of sediment samples from the offsite industrial sewer system, and in particular at the Hendrix pump station, no floating oil was observed on the water in the wet well. On several other occasions throughout these field investigations, the Hendrix pump station has been inspected and no floating oil has been observed in the wetwell.

The sediment samples which were collected from Saddle Brook at the outfall from the storm drain system detected low concentrations 0.3 and 2.4 mg/kg of PCBs (Aroclor 1242). The NJDEP has not proposed specific criteria for PCBs in stream sediment samples; these concentrations are quite low in comparison to concentrations detected onsite in soil or sludges from the sewer system.

All of the results of the chemical analyses of samples collected onsite around the boiler room and offsite in the industrial sewer system and Saddle Brook during June, 1987 were reported to the ISEE during our meeting on September 2, 1987. At that meeting a copy of the laboratory reports for the June, 1987 samples and a description of sample locations were provided to the ISEE.

III. INDUSTRIAL SEWER/STORM DRAINAGE SYSTEM ANALYSES

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As previously described, in the Fall of 1986, ENVIRON undertook a detailed program for assessment of the industrial sewer and storm drainage systems on the FOC facility. This program included a reconstruction of drainage systems from available plans and records, and extensive dye testing of drains in sewers to document their integrity and interconnection. This program culminated in the compilation of a Drainage System Plan (Plate 2 of the ECRA submission) which was last revised and submitted to the ISEE in a letter dated September 11, 1987, and is included in this report as Attachment No. 1.

The primary storm drainage system which traverses the FOC facility is enclosed in a 42 to 54-inch pipe. The storm drainage system enters the facility along the northeast boundary from beneath the off-ramp from Route 46 and flows to the southwest and south, eventually exiting the facility boundary under Molnar Road. This storm drain, according to the plumbing inspector of the Borough of Lodi, encloses a drainage system known locally as Lodi Creek. The storm drain eventually outfalls to the south of the facility into Saddle Brook, adjacent to the Hendrix pump station.

The storm drainage system has been inspected on a number of occassions at two manholes M2 and M6 at the facility. Each time, the system has been observed to be clean of any sediment accumulation, the apparent result of a relatively high flow velocity. Water was observed to be discharging through the drain system on several occasions, even following extended periods of no rainfall.

A second drainage pipe enters the property along the northeast boundary. This pipe, according to the plumbing inspector of the Borough of Lodi, transports storm water runoff, and can first be observed on the facility at manhole

M8. In addition, an onsite stormwater catch basin (no. CB6) discharges into manhole M8 from a paved area in the vicinity of the lab and locker room. In order to confirm that the water entering manhole M8 from the northeast was stormwater rather than industrial wastewater, ENVIRON collected a sample (536A-MH08-SW01) for chemical analysis. This analysis indicated the presence of low concentrations of total VOCs (157 µg/l) and no detection of semivolatile organic chemicals or PCBs. These results suggest that the water entering manhole M8 is stormwater, as was reported to ENVIRON by the plumbing inspector of the Borough of Lodi, and does not contain industrial wastewater. A 24-inch pipe interconnection has been previously constructed between manhole M8 and M6. This interconnection allows water entering manhole M8 to flow into the storm drainage system which ultimately traverses the property and discharges into Saddle Brook.

A third pipe exits manhole M8 and connects to manhole M4 and subsequently manhole M3, which is part of the industrial sewer system. Inspection of the portion of the industrial sewer system between manhole M3 and manhole M8 indicated that this pipe is virtually completely clogged with silt and sediment. No water was observed in manhole M4 during the initial inspections conducted of the sewer system during the dye testing program. This suggested that the blockage of the pipes on the upper part of the industrial sewer system, beginning at manhole M8, prevents storm water from discharging into the sewer from the northeast through the aforementioned storm drainage systems. The dye testing program further confirmed that the first point of inflow to industrial wastewater at the FOC facility is at manhole M3, and under normal low-flow conditions, this process wastewater discharges to the south through the industrial sewer system into the Hendrix pump station. The observed lack of flow in manhole M4 during the initial inspection and dye testing of the industrial

sewer system, and the documentation of manhole M3 as the first point of inflow of industrial wastewater at the FOC facility (a point which is downstream of manhole M4) led to a preliminary conclusion that the industrial sewer and storm drainage systems on the facility are not normally interconnected as reported in our earlier letter of March 25, 1987 to the ISEE.

During a subsequent inspection of the industrial sewer system on April 14, 1987, concurrent with the aforementioned sampling of sediments from the sewer system, water was observed to be flowing to the north (upstream) in the industrial sewer system at manhole M4. A dye test conducted on that day confirmed that water in the industrial sewer was flowing from manhole M4 to manhole M8 at which point it entered the storm drainage system.

The reversal of flow in the industrial sewer, causing process wastewater to flow upstream, may be the result of surcharging in the industrial sewer system further downstream due to the blockage from sediment. This reversal of flow has been observed on only one occasion throughout the period of sewer inspection and testing during 1987, and is likely a short-term condition that occurs during periods of high inflow into the sewer system. This was reported to the ISEE Case Manager during our meeting on May 20, 1987 and in a letter dated June 18, 1987.

Inspection of the industrial sewer further downstream suggests that the sewer pipes are substantially clogged with sediment to an extent that may inhibit the free discharge of process wastewater downstream through the sewer system. This condition has likely contributed in a surcharging of the sewer system at manhole M1 and catch basin CB8. During ENVIRON's inspections of these structures, water has always been observed above the crown of both the inflow and outflow pipes. The surcharging of these structures has caused manhole M1 and catch basin CB8 to act as traps for the oil which is accumulating in

the sewer system on the FOC facility. In the short-term, this condition substantially controls any release of oil through the sewer system offsite.

A second interconnection between the industrial sewer and storm drainage system was previously constructed between catch basin CB8 and manhole M2. This interconnection was closed at some point in the past. Inspection of this interconnection indicates that the plug is tight and no wastewater currently discharges from catch basin CB8 into the sewer system through this interconnection.

From manhole M1, which is the last downstream structure on the industrial sewer system on the FOC property, the industrial sewer discharges to the south through the property of Napp Chemical Co. and ultimately to the Hendrix pump station. The continuous connection of the onsite industrial sewer to the pump station was documented by a dye test which was conducted on April 7, 1987 by ENVIRON.

IV. PRELIMINARY CONCLUSIONS BASED ON CURRENT ENVIRONMENTAL DATA

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Based on the environmental data which have been collected by TenEch, Princeton AquaScience, and ENVIRON over a period of three years, all of which have been provided to the ISEE in the ECRA-2 Site Evaluation Submission and subsequent submissions by ENVIRON as described in this letter, the following preliminary conclusions can be drawn regarding the extent and nature of contamination with respect to oil and PCBs at the FOC facility and adjoining industrial sewer.

- Oil has been detected in soil samples and monitoring wells beneath the boiler room and around the adjoining abandoned underground fuel tanks. The oil is present at the water table and within a sandy alluvium, approximately four feet thick, which overlies a clay layer. The vertical extent of oil in the soil and ground water, and in particular whether oil is present within or beneath this clay layer, cannot be determined from current data but lower concentrations of oil were detected in the clay than in the overlying sandy alluvium. The oil within the water table unit beneath the boiler room is seeping in small quantities into the pit in the adjoining building no. 1. This seepage is likely the result of concurrent movement with ground water through cracks or joints in the pit wall.

- Chemical analyses of oil in the zone of saturation beneath the boiler room indicates the presence of PCBs (Aroclor 1242) at concentrations ranging from 39 to 10940 mg/kg. PCBs have also been detected in soil samples beneath the boiler room beginning at the

water table and throughout the zone of saturation to the underlying clay layer. The concentration of PCBs in soil in the zone of saturation decreases with depth from 150 mg/kg at the water table to 14 mg/kg at the top of the underlying clay unit. The PCBs in these soils appear to be present concurrent with oil, which is the likely source of these materials.

- Oil has been observed to be accumulating in manhole M1 and the catch basin CB8 on the industrial sewer system in the rear of the FOC property. Oil from these two structures has been tested and found to be contaminated with PCBs, ranging from 240 to 936 mg/kg. The source of this oil is currently unknown.

- PCBs have been detected in sediment samples from manholes on the industrial sewer system on the FOC property ranging from a low of 10 mg/kg at the upstream end of the sewer (manhole M8) to a high of 240 ppm at manhole M4. While oil has never been observed to be accumulating in manholes M3, M4, or M8, a comparison of the ratio of PCB to TPHC in the sediment samples from these manholes suggests that the PCBs are present in a petroleum hydrocarbon material at approximately the same concentration as the oil in manhole M1.

- Chemical data and observations at the site including 1) the virtual blockage of the industrial sewer system from manhole M8 to manhole M3 by sediment and sludge, 2) the substantially lower PCB concentration at manhole M8 than in comparison to concentrations further downstream on the industrial sewer system, 3) the reported no-detection of PCBs in a water sample

collected from the storm water inflow into manhole M8, and 4) the predominant accumulation of oil in manhole M1 and structure CB8 which are located at the downstream end of the industrial sewer system on the property, suggest that the oil that is observed in the sewer system is likely from an onsite source. The current physical evidence and chemical data are not conclusive in pinpointing the precise source of this oil. Inspection of in-house plumbing and industrial sewer discharges, which enter the sewer system at manhole M3, however, suggests that oil is not entering the sewer system through the permitted discharge into the industrial wastewater.

- Chemical tests for PCBs and TPHC in the offsite sewer system indicates that PCBs are present downstream to and including the Hendrix pump station. The finding of Aroclor 1260 in the manhole on the property of Napp Chemical Co. and the generally increasing levels of PCB contamination downstream from the FOC facility may suggest that another downstream source of PCBs may have discharged into the industrial sewer system. The chemical tests which have been conducted to date on these samples are, however, not conclusive in pinpointing the source of these materials. Physical evidence, primarily being the lack of any observed floating oil in the wet well at the Hendrix pump station, suggests that the PCB contaminated oils which have been observed in the industrial sewer at the FOC facility are not currently being released offsite through the sewer system.

- PCB materials are not currently used in any manner at the FOC facility and PCB contamination from the ongoing operation is not an issue.

V. PROPOSED INTERIM REMEDIAL MEASURES

V. PROPOSED INTERIM REMEDIAL MEASURES

During our meeting on September 2, 1987 with ISEE, ENVIRON described certain interim remedial measures that have been undertaken at the FOC facility to limit the exposure of workers to identified areas of contamination and to mitigate any offsite release of oils or PCBs through the sewer system. With regard to the sewer system, to date this program has involved regular inspection and bailing of oil from manhole M8 and structure CB8 followed more recently by the installation and regular replacement of petroleum absorbent pillows for collection of floating oil. Over the Spring and Summer of 1987, the rate of inflow of oil to the sewer system has diminished, and the use of spill pillows for collection and removal of the small quantities of oil that continue to accumulate appears to be effective. Until such time as the source of the oil which is accumulating in the sewer system can be identified and eliminated, this program of regular inspection and use of spill pillows for collection of oil will continue.

Drilling and chemical testing conducted at the facility to date has identified the area beneath the boiler room, and adjoining the pit wall in building no. 1, as a known source of oil and PCB contamination. At present, no direct interconnection between this area and the industrial sewer system, that would explain how oil in this area would accumulate in the industrial sewer, has been identified. Since it is clear that removal of this contaminated oil will likely be required as part of the ECRA clean-up of the facility, and since this oil is the only confirmed source identified at the site to date, a program for interim containment of PCBs and removal of this oil was proposed during our meeting on September 2, 1987. This program would involve the installation of drains through the pit wall in building no. 1 beneath the

boiler room to lower the level of the water table and remove oil from the water table unit. This would be accomplished through the installation of several drain holes with horizontal well screens behind the pit wall. These drains would be connected through a pipe manifold into a collection tank. The water and oil collected from this drain system would be treated by removal of the oil from the water followed by a polishing stage to remove any aqueous phase PCBs. After testing to confirm the lack of PCBs in the effluent, the water would then be discharged through the industrial sewer system under a permit from the Passaic Valley Sewer Commission (PVSC).

Subsequent to our meeting with the ISEE on September 2, 1987, a followup meeting was held on September 30, 1987 with the ISEE and the PVSC to discuss the preliminary findings with regard to the industrial sewer system. At the end of this meeting, the PVSC indicated its willingness to work with the facility and ENVIRON to review and consider a modification, as necessary, to the current discharge permit to allow the onsite treatment and subsequent discharge to the industrial sewer of these contaminated ground waters.

Beginning in early 1986, the ground water seepage and small amount of oil that has accumulated in the pit in building no. 1 have been treated before discharge into the industrial sewer system. This treatment is comprised of a dual stage diatomaceous earth followed by granulated activated carbon filter system. This treatment system has been in place and operated continuously, with regular changing of the filter media, since early 1986. During the meeting with the PVSC and the ISEE on September 30, 1987, the PVSC requested that the discharge of the water from this treatment system be tested prior to discharge to demonstrate the lack of any detected aqueous phase PCBs. Consequently, beginning September 30, 1987, all water that is treated in this system will be retained in a storage tank and tested before discharge. These test

results will be retained at the FOC facility and provided to the ISEE and PVSC at their request. It is anticipated that upgrading and possible expansion of this initial treatment system will be used to treat the ground water and oil which is recovered from the ground water drainage system from beneath the boiler room. The final design for a treatment system for this water has not yet been completed but further details will be provided to the ISEE and PVSC when available.

As previously described, interim measures have already been taken to reduce exposures to PCBs by workers at the facility. These interim measures have included the enclosure of the hot oil system and covering of visibly stained floors within the boiler room by plywood. In addition, access to known PCB contaminated areas has been strictly restricted to only a few plant personnel on an "as-needed" basis. Warning signs have been posted in areas known to be contaminated and all plant personnel have been briefed regarding appropriate access restrictions and health and safety procedures.

In order to further define any potential exposure to plant personnel from PCB contamination, a Certified Industrial Hygienist has been retained by Fine Organics Corporation to conduct a worker safety survey at the facility. This survey will involve the collection of air and wipe samples from within the boiler room and building no. 1, which are areas of identified PCB contamination. Also, included in this survey will be a review of plant health and safety procedures.

VI. RELATIONSHIP TO ONGOING ECRA INVESTIGATIONS

'ONSHIP TO ONGOING ECRA INVESTIGATIONS

' in this report has been conducted in
ɔn approval by the ISEE of the ECRA
was originally submitted in April, 1986 and
ɹne 18, 1987. Nonetheless, ENVIRON and HEXCEL
.ıis work, if not done to date, would have
ɔeen required under ECRA and further that there are
.ıg reasons for an expedited investigation of the
.cial for onsite contamination by oil and PCBs in the sewer
.stem pending the ISEE's continual review of the proposed ECRA Sampling Plan.

This work by ENVIRON has been conducted in anticipation of its eventual incorporation into the report of findings from the ECRA investigation, and all sample collection procedures and laboratory analyses have been conducted with strict adherence to ECRA program requirements. We have endeavored to the extent possible to involve the ISEE in this process by prompt verbal and written reporting of all chemical test results and frequent discussions with the case manager and staff geologist about our plans for further investigation. As a result of these investigations, substantial progress has been made in understanding the nature of PCB and oil contamination at the facility and in reducing the potential for any offsite release.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FEB 10 2004

GENERAL NOTICE LETTER
CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Stephen C. Forsyth, CEO
Hexcel Corporation
2 Stamford Plaza
Stamford, CT 06901

RE: Diamond Alkali Superfund Site
Notice of Potential Liability for
Response Actions in the Lower Passaic River Study Area, New Jersey

Dear Mr. Forsyth:

The United States Environmental Protection Agency ("EPA") is charged with responding to the release and/or threatened release of hazardous substances, pollutants, and contaminants into the environment and with enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9601 et seq. Accordingly, EPA is seeking your cooperation in an innovative approach to environmental remediation and restoration activities for the Lower Passaic River.

EPA has documented the release or threatened release of hazardous substances, pollutants and contaminants into the six-mile stretch of the river, known as the Passaic River Study Area, which is part of the Diamond Alkali Superfund Site ("Site") located in Newark, New Jersey. Based on the results of previous CERCLA remedial investigation activities and other environmental studies, including a reconnaissance study of the Passaic River conducted by the United States Army Corps of Engineers ("USACE"), EPA has further determined that contaminated sediments and other potential sources of hazardous substances exist along the entire 17-mile tidal reach of the Lower Passaic River. Thus, EPA has decided to expand the Study to include the areal extent of contamination to which hazardous substances from the six-mile stretch were transported; and those sources from which hazardous substances outside the six-mile stretch have come to be located within the expanded Study Area.

By this letter, EPA is notifying Hexcel Corporation ("Hexcel") of its potential liability relating to the Site pursuant to Section 107(a) of CERCLA, 42 U.S.C. §9607(a). Under CERCLA, potentially responsible parties ("PRPs") include current and past owners of a facility, as well as persons who arranged for the disposal or treatment of hazardous substances at the Site, or the transport of hazardous substances to the Site.

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In recognition of our complementary roles, EPA has formed a partnership with USACE and the New Jersey Department of Transportation-Office of Maritime Resources ("OMR") ["the governmental partnership"] to identify and to address water quality improvement, remediation, and restoration opportunities in the 17-mile Lower Passaic River. This governmental partnership is consistent with a national Memorandum of Understanding ("MOU") executed on July 2, 2002 between EPA and USACE. This MOU calls for the two agencies to cooperate, where appropriate, on environmental remediation and restoration of degraded urban rivers and related resources. In agreeing to implement the MOU, the EPA and USACE will use their existing statutory and regulatory authorities in a coordinated manner. These authorities for EPA include CERCLA, the Clean Water Act, and the Resource Conservation and Recovery Act. The USACE's authority stems from the Water Resources Development Act ("WRDA"). WRDA allows for the use of some federal funds to pay for a portion of the USACE's approved projects related to ecosystem restoration.

For the first phase of the Lower Passaic River Restoration Project, the governmental partners are proceeding with an integrated five- to seven-year study to determine an appropriate remediation and restoration plan for the river. The study will involve investigation of environmental impacts and pollution sources, as well as evaluation of alternative actions, leading to recommendations of environmental remediation and restoration activities. This study is being conducted by EPA under the authority of CERCLA and by USACE and OMR, as local sponsor, under WRDA. EPA, USACE, and OMR are attempting to coordinate with the New Jersey Department of Environmental Protection and the Federal and State Natural Resource Trustee agencies. EPA, USACE, and OMR estimate that the study will cost approximately $20 million, with the WRDA and CERCLA shares being about $10 million each. EPA will be seeking its share of the costs of the study from PRPs.

Based on information that EPA evaluated during the course of its investigation of the Site, EPA believes that hazardous substances were being released from Hexcel's facility located at 205 Main Street in Lodi, New Jersey, into the Lower Passaic River. Hazardous substances, pollutants and contaminants released from the facility into the river present a risk to the environment and the humans who may ingest contaminated fish and shellfish. Therefore, Hexcel may be potentially liable for response costs which the government may incur relating to the study of the Lower Passaic River. In addition, responsible parties may be required to pay damages for injury to, destruction of, or loss of natural resources, including the cost of assessing such damages.

Enclosed is a list of the other PRPs who have received Notice letters. This list represents EPA's findings on the identities of PRPs to date. We are continuing efforts to locate additional PRPs who have released hazardous substances, directly or indirectly, into the Passaic River. Inclusion on, or exclusion from, the list does not constitute a final determination by EPA concerning the liability of any party for the release or threat of release of hazardous substances at the Site. Be advised that notice of your potential liability at the Site may be forwarded to all parties on this list.

We request that you consider becoming a "cooperating party" for the Lower Passaic River Restoration Project. As a cooperating party, you, along with many other such parties, will be

expected to fund EPA's share of the study costs. Upon completion of the study, it is expected that CERCLA and WRDA processes will be used to identify the required remediation and restoration programs, as well as the assignment of remediation and restoration costs. At this time, the commitments of the cooperating parties will apply only to the study. For those who choose not to cooperate, EPA may apply the CERCLA enforcement process, pursuant to Sections 106 (a) and 107(a) of CERCLA, 42 U.S.C. §9606(a) and §9607(a) and other laws.

A group of Notice letter recipients represented by Mr. William Hyatt, Esq. of Kirkpatrick & Lockhart LLP in Newark, NJ is currently negotiating the terms of an Administrative Order on Consent ("AOC") with the EPA, draft enclosed. You are strongly urged to contact Mr. Hyatt at (973) 848-4045 as soon as possible since EPA has established a February 20, 2004 deadline for execution of the AOC.

Pursuant to CERCLA Section 113(k), EPA must establish an administrative record that contains documents that form the basis of EPA's decision on the selection of a response action for a site. The administrative record files, which contain the documents related to the response action selected for this Site are located at EPA's Region 2 office (290 Broadway, New York) on the 18th floor. You may call the Records Center at (212) 637-4308 to make an appointment to view the administrative record for the Diamond Alkali Site, Passaic River.

If you wish to discuss this further, please contact Ms. Elizabeth Butler, Remedial Project Manager, at (212) 637-4396 or Ms. Kedari Reddy, Assistant Regional Counsel, at (212) 637-3106. Please note that all communications from attorneys should be directed to Ms. Reddy.

Sincerely yours,

George Pavlou, Director
Emergency and Remedial Response Division

Enclosures

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